

## COMPUTING

December 17-30 1987 80p WEEKLY

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## BT 2, Hewson 0



Paula Byrne of BT.

A COURT ruling has brought to an end the long delay in releasing *Morphus* and *Magnetron*. Both games will now enter shops on the Firebird label in the New Year.

Paula Byrne, head of Telecomsoft, was very pleased with the situation, stating, "Both *Morphus* and *Magnetron* will now be re-

leased as Graftgold wished, with the full backing the titles deserve."

The court case was the culmination of an argument which has been going on since Graftgold, alias Steve Turner and Andrew Braybrook, left Hewson and signed a long term planning contract with Telecomsoft.

Prior to this signing, Graftgold had used Hewson to publish all its games, and so Hewson assumed they would continue to publish on Graftgold's behalf. BT and Hewson then came to blows over who would publish *Magnetron* and *Morphus*.

This decision has now been made for them with the judge allowing Telecomsoft to publish the game in the short term. The final decision will not be made for several months.

According to Paula Byrne, "It was a hearing at which the final decision could not be made about the product. It is a fairly complex case."

Andrew Hewson was not impressed. "I'm pig-stick about it", he said. When asked why he thought the judge had ruled in favour of BT, Hewson commented,

"Money talks. The truth is BT could buy the whole of this market tomorrow if they felt like it. That's what financial clout is all about."

Hewson went on to point out that the judge had only made a ruling in essence, so that Hewson still had a chance of regaining the two titles. He believed that the judge was even in their favour in terms of the company's rights.

"He implied we would do well at the trial," said Hewson.

## Christmas sales rocketing

1987 looks set to be a bumper Christmas for the computer industry, with sales of software and hardware more than living up to expectations.

Rachel Davies, marketing manager of Mastertronic, was enthusiastic, saying, "The +3 titles have been selling like hotcakes and we've had difficulty keeping up with the demand for our labels such as *Ricochet* and *Americana*."

A spectacular Christmas was certainly on the cards for Tyne-soft. A spokesperson claimed, "Sales are up 200 per cent on this time last year. The main problem is keeping enough stock to meet demand."

It would appear that all software houses were in for a fruitful festive season, with Bruce Everiss of Code Masters claiming, "We're shifting 30,000 units a day," and

Andrew Hewson commenting, "The market is now moving and I am extremely pleased with the way *Nebulus* is selling."

They were not the only ones. Hardware manufacturers and retailers also expected increased sales over the Christmas period. A spokesperson for Commodore enthused, "The Amiga is going great guns, we've sold all the ones we've got. We're just concentrating on getting the stuff out."

Retailer Tandy was having the same problem of keeping up with sales. "They're almost gone before they're here," said a spokesperson.

The only hint of dissatisfaction came from Graham Greene of Ryman, who revealed that while sales of Amstrad items were 'picking up', the best time for trade was the two weeks following Christmas.



Christmas shopping in London's Oxford Street.

All in all, the computer industry as a whole is anticipating a profitable Christmas and is looking forward to an even bigger and better '88.

# MATCH DAY II



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**W**ith less than ten days to Christmas, it seems that the computer industry is set to enjoy all the festive season can bring. If the various PR pushers are to be believed, Santa Claus will be run off his feet this year, lugging Amigas and Amstrads to eager consumers.

But will he have any Atari 520 STs? The current shortage is certainly not amusing dealers, some of which have not received any at all. It is estimated that there is a shortfall of 200,000 Atari's world-wide, with Britain lacking 20,000. Perhaps their New Year's resolution will be to make more accurate forecasts for 1988.

But while Santa is stocking up his sleigh, wrangles within the computer industry continue as ever, despite it being the season of goodwill to all men.

The situation between Hewson and BT, for instance, has still not adequately been resolved. After a recent court ruling, BT has now been allowed to publish Morphous and Magnetron, but only for the time being.

The saga looks set to drag on for some time and it remains to be seen if the dispute will ever arrive at a satisfactory conclusion.

Tessa Sanderson, however, is most definitely feeling the Christmas spirit, following her recent £50,000 sponsorship deal from Commodore.

One can only hope that other companies, not just in the computer industry, will be influenced by Commodore's gesture and turn to sports sponsorship.

For years the tobacco barons have seen sports sponsorship as a lucrative way of advertising their products. If it is good enough for them, surely it is time multi-national companies like Commodore and Atari got in on the action.

One company who has not yet moved into sports sponsorship but who is renowned for diversification, is Mastertronic. With a number of distribution deals to its credit, it is the subject of this week's News Analysis. Is Mastertronic set to gradually infiltrate every software company until distribution becomes synonymous with its name?

Ponder on that one. In the meantime, *Popular Computing Weekly* wishes all its readers a very Merry Christmas and a Prosperous New Year.

John Brissenden

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## ABC

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# EA's Nexus in trouble

NEXUS, one of Electronic Arts' affiliate labels, has gone into liquidation.

Less than a year after Nexus came under the wing of the U.S. giant, financial troubles have forced its downfall.

Nexus director Paul Voisey put the problem down to the company's "historic indebtedness."

"The company has not had sufficient money to fund a strong product line," he said.

According to John Forrest, director of European distribution for Electronic Arts: "They were very frank with us. They came and said they'd been looking through their books and were in financial difficulty."

"Their last game was *Skull Diggery* which was also sold in Germany and France," said Forrest. "Certain things needed redoing, though, such as the cover for France. They just did not get done."

Forrest stressed that he was very saddened by what had hap-

pened to Nexus especially since he had faith in their creative capabilities. "They had some very good products coming along the line," he said. A spokesperson on behalf of Neville Eckley and Co., the liquidators, informed us, "There have been a number of inquiries about the products."

He refused to divulge who the interested parties were, saying only, "I cannot comment further until there has been a meeting with the creditors about the company's insolvency. This should take place on January 7th."

Such an occasion will be met with interest by Electronic Arts to see if it would still be involved in distributing the product. Forrest was undecided about what the role of Electronic Arts would be in the future, stating, "I presume the liquidator will look on the products as assets and auction them off. Since there is no Nexus any more, we will not automatically distribute the products. We will have to wait and see who gets them."



John Forrest - things needed redoing

# CBM's golden girl



Tessa Sanderson with Adam Faith, Sebastian Coe and Steve Franklin

OLYMPIC Gold medalist, Tessa Sanderson is to receive \$50,000 sponsorship from Commodore Business Machines. Details were revealed at a press conference at which Sanderson was accompanied by fellow athlete Sebastian Coe, who enthused about the deal. "She now has the opportunity to train single-mindedly, which is the only way you can train to win an Olympic title," he said.

The deal evolved after Commodore boss Steve Franklin had read that Sanderson did not have a

sponsor for next year's Olympics in Seoul.

Being something of an amateur athlete - "I have run four marathons and even at that level I was out every morning at 11 o'clock to get fit" - Franklin was appalled that nobody had sponsored Sanderson.

He then decided to do it and, after negotiations with Adam Faith, who acts as Sanderson's manager, the sponsorship was arranged.

Faith was eager to point out

that the deal was not only important for Sanderson but for all other athletes seeking sponsorship. "It will help athletes get more sponsorship by companies recognising what Commodore put into the sponsorship," he said.

In return for the sponsorship, Sanderson will wear the Commodore name and logo whenever she appears in public. "As a major computing company, we attend many functions and trade fairs. Tessa is happy to be there if it does not interfere with her training," explained Franklin.

According to Commodore's Dean Barrett: "Commodore will be taking an education roadshow into universities and middle schools. Sanderson will be present sometimes to talk to the children and keep them interested."

The sponsorship will be Commodore's second excursion into the sports world. Coe summed it up aptly when he commented: "Commodore now has the two great loves of my life - Tessa Sanderson and Chelsea Football Club."

# Acorn staff sacked

ACORN has made 47 of its 300 staff redundant in an attempt to restructure the company. Michael Page, Acorn public relations manager, stated that the job losses were due to a change in business operations.

"We will no longer produce tailor-made products for individual consumers; we shall be producing only volume products," he said.

It is widely believed that the decision was made by Acorn after incurring losses on this side of its business. While not confirming what losses Acorn had experienced, Page remarked: "We have been open about the fact that this system was not producing the necessary financial returns."

But Page is optimistic. "We telephoned 60 dealers anonymously to see their reaction to it. Most had it in stock and were keen to demonstrate it. There seems to be considerable demand for it."

## Psion gets surveyors organised

SURVEYORS can save up to fifty per cent of their time according to the manufacturers of a new electronic 'field book'.

Sokkisha, one of the major manufacturers of surveying equipment, has based its SDRP Electronic Field Book on the handheld computer - Psion Organiser II. It will enable surveyors to easily collect survey data in the field and then transfer it to a computer.

At the touch of a button, the 'field book' will automatically record readings, such as distances and angles from field survey instruments.

Later, by plugging it into a standard PC, these readings can be downloaded, and without further manipulation of data, a detailed plot can be produced. Since this information can be entered and retrieved automatically, this electronic data method is said to eradicate the errors of handwritten field books.

The Sokkisha product is based on the Organiser II but certain revisions have been made, includ-

ing reinforcement of the solid casting, development of special application software and modification of the keyboard for specific filed applications.

The Sokkisha version has the added advantage of being able to switch to a fully functional Organiser II. Price varies according to requirements and size of package. For further information, telephone Sokkisha: 0293 561626.



Automatically records distances and angles

## Long cold winter for Atari ST buyers

PROSPECTIVE purchasers of the Atari 520 ST may be deprived of the computer before Christmas because of a massive shortfall of between 15,000-20,000 machines.

When asked why such a shortage had occurred, Bob Gleadon, managing director of Atari Group U.K., commented: "I think we were over cautious in our forecast."



Bob Gleadon - over cautious.

While a spokesperson for Dixons denied that there was difficulty in obtaining numbers of the 520, Gleadon explained that most dealers were experiencing a shortfall. "Most dealers are not getting as many as they would have hoped," he said. "We are having to fly in the product so that we can distribute them about once every three days."

Atari distributor Silica Distribution was well aware of the shortage. According to its spokesperson: "We have been out of stock for about three or four weeks, as there have not been any in the country. There is a big backlog of people wanting them but we should get them in soon."

In the trade press last week, Atari's U.K. national sales manager Paul Welch stated that some people would not get an ST before January but he expected the situation to be resolved soon.

## Mastertronic in Japanese deal

MASTERTRONIC has just signed an exclusive distribution deal with Technos, a major Japanese development company.

To be distributed under the Melbourne House label, the deal encompasses both Technos' existing and future titles. First game to be released under the new partnership will be the popular arcade game, *Double Dragon*.

The deal was initiated by Justin Heber, president of Arcadia, the coin-op subsidiary of Mastertronic. Distribution for Arcadia in the U.S. is carried out by Tradewest, who also distributes for Technos. As a result, the parties met and began negotiations.

Geoff Heath of Mastertronic, Ken Imawoto, president of Technos U.S.A. and John Rowe, president of Tradewest, all met in London last week, when the deal was finally signed and sealed.

Rachel Davies of Mastertronic, was eager to point out that Master-



Frank Herman of Mastertronic.

tronic did not need to look for licensing deals and so when one was undertaken, it would be very special.

"The products from Technos are absolutely fantastic," she added.

## Prince Charles launches venture

PRINCE Charles recently launched a unique venture aimed at increasing children's awareness of high-technology.

For the first time, a permanent, high-technology, work-station will be constructed on one site. Based in Calderdale, Halifax, twelve acres have been set aside for this centre, where children will be able to go and actually use the equipment.

John Smith, technical adviser to the local education authority was enthusiastic about the project.

"We are particularly aiming at groups of children up to the age of 13 years," he said. "We want to establish a children's exhibition centre rather than one for students and interactive exhibits have been designed accordingly."

These exhibits are aimed at promoting creativity, technology and design among young people. David Parker, PR person for Acorn, gave an example. "By experimenting with computer graphics children will be able to develop

greater artistic awareness," he said.

Acorn is significantly involved in the project, with Archimedes machines already installed in the centre. According to Bob Coates, Acorn's senior education advisor, "Acorn's involvement, by virtue of its specialised knowledge in the educational field, will primarily be that of a technological adviser - both in terms of the equipment being featured and the system required to operate it."

Costing about \$8 million, major funding for the centre is being provided by the Prince of Wales' Inner City Trust and the local authority. It is expected to take two years to complete. However, certain equipment has already been installed for use, including the Archimedes computer.

Parker stressed that the centre provided a unique environment in which children could learn about computers and technology. "It's rather like a work-shop Alton Towers," he said.



## Maths and economics on school micros



Yes Chancellor - educational software?

**GIANT Killer** and **Yes Chancellor** are the unlikely titles of educational software products available from Toolooka. Available for the BBC, Master Compact, Amstrad CPC, PCW and PC machines, **Giant Killer** is a maths adventure game for 9-15-year-olds.

Based very loosely on the tale of *Jock and the Beantalk*, the puzzles embodied in the game range from the more simple spatial investigations, co-ordinates and calculator work to more complex tessellations, topology, mapwork and time/space puzzles.

**Giant Killer** has been tested with children of varying abilities

and has been found to challenge all children, not only those of higher intellect. Prices for the product range from \$9.95 for the Amstrad CPC to \$20.70 for the Master Compact.

**Yes Chancellor**, on the other hand, is a simulation of the British economy. The object is to remain at No. 11 Downing Street by winning an election every five years. To do so the player must deal with all the problems which would be encountered by a real Chancellor of the Exchequer - controlling taxation, inflation, spending on social services and so on.

The game is a simplified but accurate version of politics and the management of money in society. It has four levels of difficulty, so that the player can learn what running the country involves before taking office.

To reflect the uncertainties of real life, random numbers are used but, since these are confined within the boundaries of probability, program developments follow general economic laws and are tied logically to decisions made by the player.

**Yes Chancellor** is available on the Amstrad CPC, \$9.95; PCW, \$14.95 and PC 1612, \$17.50.

## After Amiga, now Mac Virus too?

ACCORDING to a source at a Cleveland ITEC, there could now be a virus on the Apple Mac computer.

It is not the same as the Amiga virus and may be even more disruptive, since the source has not been able to get rid of it. He described what happened.

"A public domain program called **Mac Tracks** was found on the hard disc and accidentally installed on the desk-top. After a day, files by the name of **Mac Tracks** started to appear. All could be deleted except one, which was locked. The program was then removed from the Macintosh desk-

top but files still appeared. Now even floppy discs are getting infected and are appearing every day. All can be deleted except the one on the hard disc."

Chris Lanigan, editor of *The Mac User* magazine, was doubtful whether this instance substantiated belief in a Mac virus, saying: "Because of the constant upgrades with Mac systems, it probably just means they have got something that is incompatible with a new system. It could be one of a thousand things."

A spokesperson for Apple Mac Company stated that they had heard nothing about it.

## Script/Spell deal

LOCOMOTIVE Software is offering an improved version of **LocoSpell** at a reduced price.

Available this month, **LocoSpell 2**, the corrector and spelling checker for **LocoScript 2**, will cost only \$19.95.

The product works internally so the user does not have to swap disks to check spelling and can see the document on the screen the whole time. It also now has its own menu, which can be consulted by a single keystroke, and there is a 78,000 word dictionary available for the PCW 8512.

For those wanting to purchase

both **LocoScript 2** and **LocoSpell 2**, a special combined package is available for \$34.90.

In addition, there is a New Year's offer for **LocoMail 2**, the mailshots and arithmetic package for **LocoScript 2**.

**LocoMail** can be put to a variety of uses, including preparing letters and invoices, processing telephone orders, cross referencing legal documents, printing labels, etc.

In the shops from January 1988, **LocoMail 2** will retail at \$29.95. For existing users of **LocoMail** and PCW 8153 owners, the new version is available separately for \$14.05.

## Commodore/Code Masters 3.5" bundle

COMMODORE is currently engaged in talks with Code Masters about the possibility of bundling games with a new 3.5" disc drive.

According to Bruce Everiss of Code Masters, Commodore has been questioning the technicalities of such a project, and has been affirmed by Bruce that it is possible.

Since the 3.5" disc drive is notoriously difficult to load, the new one would be considerably

better than its predecessor. Everiss was hoping they would come to a suitable agreement saying, "The new disc drive would be an ideal vehicle for the Code Masters Plus range."

Tom Hart, national sales manager for Commodore, confirmed that he had been talking to Code Masters about various projects, but remarked, "No firm agreement has been made to bundle anything, anywhere."

## IBM make deal with Dixons

IBM HAS made a deal with Dixons to supply its new PS/2 Model 30 to six Dixons Business Centres.

This is a first for the world's largest and most profitable company, who previously has only sold through licensed dealers.

A spokesperson for IBM was evasive about why such a deal had taken place, commenting, "They applied to be dealers and this was authorised."

A well-informed spokesperson for the industry was not impressed with the deal, saying, "The Model

30 is only distinguishable from the Amstrad by its IBM badge and 3.5 inch disc."

This attitude probably stems from the fact that the Model 30 lacks the special features of its associates in the new range.

It does not have VGA graphics, an OS/2 operating system or Micro Channel Architecture.

"It is an odd machine for Dixons to take," the source continued, "It is not a home machine. It is for business people who do not know any better."

# True successor

TRUE BASIC is a new programming language from Kemeny and Kurtz, the creators of the original Basic program more than 20 years ago.

Bruce Godfrey, Precision's marketing director, commented: "Because of the highly flexible nature of programming today, we see True Basic as a leading edge product which could change the way we think about programming."

True Basic is claimed to be superior to other programming languages in that it is more flexible than Pascal, has better graphics than C and is easier to learn

than Fortran.

An added incentive for the program is that it is portable, which means that a program written for one computer, say the Atari ST, will run equally well on the Amiga, IBM PC or Macintosh.

To simplify the language, certain facilities have been added, such as an on-screen editor, on-line help screens and top graphics capabilities.

True Basic will retail at \$69.95 inc. VAT. Various add-ons are available from Precision, including 3D graphics and a Developer's Toolkit, priced at \$39.95 each.

# Down the highway

US GOLD has come good in time for Christmas with their eagerly awaited big budget releases.

*Out Run*, the sensational coin-up in which you drive a sports car down highways and byways with a girl at your side, has been released in Commodore 64 and Spectrum formats. The Amstrad CPC version was expected to be

released as we went to press. Richard Tidsall of US Gold confirmed that all three versions would be in the shops before the 25th.

Owners of the Atari ST computer will have to wait a little longer for their copies.

*Out Run* and *Gauntlet* on the ST are not expected until January.

# Monroe set to move to UK

MONROE Systems for Business Inc, a major U.S. supplier of business systems, has now established a wholly-owned U.K. subsidiary. At Compec it unveiled a range of IBM-PC/AT-compatible microcomputers and calculators.

Designated the 3000 series, the 286-based and 386-based systems are considered suitable for a variety of applications - business, personal or educational. Both systems are versatile and will support IBM PC/AT-compatible operating systems, e.g., C.DOS and Xenix.

A Monroe 3-286 with 512K RAM, CGA/Hercules video card, paper white monitor, one 1.2MB floppy disc drive and one 20MB hard disc drive will retail at around £1,875, excluding VAT.

The Monroe 3-386 with 2MB RAM, CGA/Hercules video card, paper white monitor, one 1.2MB



Range of IBM - PC/AT - compatible microcomputers and calculators.

floppy disc drive and one 40MB hard disc drive will retail at around £2,950, excluding VAT.

# Channel 4's NETWORK 7

## Channel 4's NETWORK 7

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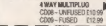
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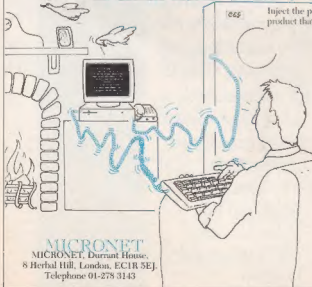
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### TERRORPODS

It's been a long watch.... As the sun disappears over the horizon, the unrelenting, grey bleakness of Golan becomes apparent. Following the intense heat of the day, the onset of night adds the bitterness of sub-zero temperatures to an already hostile environment, and the stark interior all the D.S.V. appears almost homelike.

Deep melancholy is suddenly smashed by the shrill scream of a siren. The status panel has gone crazy, an extraordinary array of lights flash uncomprehendingly. Good grief, what's happening?

Frantically, you turn to look at the command scanner, rushing through the maze of information before you. In a desperate attempt to decipher what has happened.

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## DIARY DATES

### JANUARY

January 19-22 1988

#### The Which Computer? Show

The National Exhibition Centre, Birmingham

**Details:** Product launches, free seminars concerning computing issues in lay terms

**Organiser:** Cahnors Exhibitions, Chatsworth House, 59 London Road, Twickenham TW1 3SZ, 01-891 5051

### FEBRUARY

February 4-6 1988

#### The Amstrad Computer Show

The Great Hall, Alexandra Park, London

**Details:** Displays and demonstrations of all the latest hardware, software and peripherals for Amstrad computers

**Organiser:** Database Exhibitions, 061-456 8383

This event has been postponed from January 28-30 to the above date.

### MARCH

March 18-20 1988

#### The Electron and BBC Micro User Show

UMIST, Manchester

**Details:** Displays and demonstrations of all the latest hardware, software and peripherals for Acorn computers

**Organiser:** Database Exhibitions, 061-456 8383

### APRIL

April 22-24 1988

#### The Atari User Computer Show

The West Hall, Alexandra Park, London

**Details:** Displays and demonstrations of all the latest hardware, software and peripherals for Atari range

**Organiser:** Database Exhibitions (0625) 878888

### MAY

May 13-15 1988

#### The Electron & BBC Micro User Show

New Horticultural Hall, Greycoat Street, Westminster

**Details:** Displays and demonstrations of hardware and software for the Acorn range of micros

**Organiser:** Database Exhibitions, 061-456 8383

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. We cannot accept responsibility for any alterations to show arrangements.



## SOFTWARE HOTLINES

The terribly exciting screenshot above is an up and coming game from **Gremlin Graphics**, *Masters of the Universe*, which is now out on budget label on the C64 from **Mastertronic**, and should be available on the Spectrum shortly. The ST version is due for early January release.

**Grand Slam Software**, who recently brought you *Red October*, will be busy programming *Peter Beardsley's Football Game* for release some time during 1988. At the moment the most substantial thing about the game is the licensing agreement.

Did you see Mike Gatting on TV play-testing the game I suggested the other week?

I thought the graphics were quite good, even though no blood was spilt, but the sound left a lot to be desired!

Good news for ST owners from **Epyx**. *The Premier Compilation* contains Championship Wrestling, World Games, Winter Games, and Super Cycle. The six disc set will cost a reasonable £29.95.

The **Firebird** budget range

springs into action with four new releases, all but one of which is on the Spectrum. *Sports Hero* is a collection of sports games. Blimey, fancy that. *Tank Busters* sports a 3-D view as you rampage through your barbaric enemies. *Rainbow Dragon* (C64) has you as a dragon trapped underground, and you can cast spells to combat the dangers. Chaos has you play at being one wizard, selected from a group of eight. You then have to kill the others. Sounds like a nice sort of party, doesn't it?

Down at the bottom of the page is a screenshot of the new release on **Codemasters Plus** range of games. We'll have a review of *Jet Bike Stuntator* next week; the game will be released on January 6th. Also from **Codemasters** on the same day, the C64 version of *Super BMX* in the Plus range, and back at normal price, *ATV* (C64), *3D Starfighter* (Spectrum and Amstrad) and *Super Stuntman* (Spectrum). *Super BMX* will also be launched on the ST and Amiga, and the C16/+4.

Well, Christmas is well and truly upon us, he said with fifteen Earl days left to go, so may I offer season's greetings to everyone reading this. Have a festive time, I'll catch you all in the new year. Bye.

Duncan Evans

## CHARTS

### Top Twenty

- (1) Combat School
- (2) Grand Prix Simulator
- (4) Live Ammo
- (NE) Outrun
- (3) Solid Gold
- (6) Star Wars
- (7) Game Set Match
- (10) Gary Lineker's Superstar Soccer
- (8) Match Day 2
- (19) 10 Pack
- (5) Soccer Boss
- (12) Joe Blade
- (25) 720
- (16) Fruit Machine Simulator
- (10) Dizzy
- (9) Pro Ski Simulator
- (11) Renegade
- (13) BMX Simulator
- (20) Thundercats
- (21) World Class Leaderboard

- Ocean  
Code Masters  
Ocean  
Sega-USA Gold  
US Gold  
Domark  
Ocean  
Gremlin Graphics  
Ocean  
Gremlin Graphics  
Alternative  
Players  
US Gold  
Code Masters  
Code Masters  
Code Masters  
Imagine  
Code Masters  
Elite  
Access-USA Gold

All figures compiled by Galap



# Diverse pursuits

Diversifying into distribution is among Mastertronic plans for 1988. Nikki Carvey investigates.

**M**astertronic - budget software arcade games and distribution are among its diverse pursuits. Throughout this year, it has been accumulating licensing deals - how far is it planning to go? What computer software pies do Frank Herman and Co. plan to stick their fingers into next?

Most recently, Mastertronic has received coverage over its link-up with Activision. Referring to the deal, Mastertronic's new projects manager Geoff Heath commented, "I'm sure which have saved up their useful life as full-price products have got tremendous potential as budget titles."

"This philosophy has been applied in the past to US Gold and Bowson, since Mastertronic acts as distributor on their behalf. It was success with these that prompted Mastertronic to expand its distribution service - something which is set to continue in 1988."

"We will be costing our net world-wide in 1988", said Heath. "With our marketing and sales effort we can handle a lot of third party products."

Heath hinted that there were a number of other companies wishing to team up with Mastertronic, but refused to divulge exactly who they were.

"The Rioschet label will grow dramatically next year, with Activision and the other products we hope to get on board", was all he would say.

Rod Cousins, managing director of Activision, discussed the factors influencing his deal with Mastertronic, aside from his long-standing association with Geoff Heath.

"We were conscious of Mastertronic as a budget label and thought budget was an important part of business to go into as a secondary line," he said.

Cousins was adamant, however, that Activision had no plans to move into the budget market as a competitor to Mastertronic although the secondary aspect would be of increasing importance to it.

The budget market was also important to US Gold, as expressed in their multi-million pound sales



Geoff Heath, Mastertronic Project Manager

and distribution deal with Mastertronic.

Geoff Brown, managing director of US Gold, commented, "In quality terms the Americana range was one of the highest - the distribution success, which is the key to any consumer product, is now guaranteed."

Similarly, Andrew Hewson approached Mastertronic because he was aware of their strength in the software marketplace. "I was determined to establish my own Rack-It label," he said, and I was keen to find somebody who could put the product in all the stores, CTNs and garages."

He added that the latest Gallup figures show that Mastertronic is the strongest at getting products onto all shelves. The latest figures allocated Mastertronic 21.2 per cent of the marketplace, putting them way ahead of their closest rival, Code Masters with 13.2 per cent.

A spokesperson for Gallup stated that in terms of software units

sold, Mastertronic accounted for one in five games. Mastertronic is obviously very pleased with its position at the top of the market having vociferously complained to Gallup about the way the percentage was calculated.

Heath is confident Mastertronic will retain this hold throughout 1988 - and perhaps even increase it if future deals go according to plan.

Some of its projects for the future will be associated with Melbourne House, a subsidiary which Mastertronic acquired earlier this year.

It is Heath's intention to take the company upmarket to mainly 15-bit products.

To assist this rise, Mastertronic has succeeded in a timely distribution deal with Technos, a major Japanese development company. According to Mastertronic PR person Rachel Davis, this is a first for the company. "Nobody else has done a world-wide deal with developers before," she explained.

The deal evolved through Mastertronic's spin-off subsidiary, Arcade. Here too things are changing. Mastertronic has now come up with Super Select System, a sort of games jukebox. Instead of one arcade game in a cabinet, there will be five. At present these are either sports simulations or action games. "The reaction to it in the trade has been tremendous," said Heath.

While Mastertronic is now often associated with the budget market, it seems that its other projects should be taken equally seriously.

For Mastertronic, the future appears to lie in full-price software just as much as budget. Perhaps, like Rod Cousins of Activision, the company believes that full-price is more able to foster innovation and progress.

When examining the expansion and diversification of Mastertronic, the influence exerted by Virgin obviously comes to mind. Does it have any control over Mastertronic's business participation? As far as Virgin and Mastertronic are concerned, Virgin's involvement is strictly a "hands off" investment.

While this may be true, Virgin has certainly fuelled Mastertronic's interest in CD ROM and interactive video. It is believed that something may come to fruition late next year, although Heath was again evasive about the matter, saying only, "It is very early days yet. We are co-operating with Virgin in these areas as it is a logical market to go into."

One is left speculating on how much further Mastertronic is likely to go. Those who have signed deals with the company have done so predominantly because its distribution service shines - in the case of CTNs and other alternative outlets, Mastertronic successfully trod where no-one had gone before.

From this Mastertronic has gone on to bigger and better things. 1987 was a good year, in which Mastertronic undertook some impressive distribution deals. What is in store for 1988 and who else will we see jumping on board the Mastertronic bandwagon? □

## 'Tis the season to be clever

On the FIRST day of Christmas my micro gave me one A mouse on the video screen.

On the SECOND day of Christmas my micro gave to me TWO keyboard bounces And a mouse on the video screen.

On the THIRD day of Christmas my micro gave to me THREE read/write errors, TWO keyboard bounces And a mouse on the video screen.

On the FOURTH day of Christmas my micro gave to me FOUR loose plugs, Three read/write errors, Two keyboard bounces And a mouse on the video screen.

On the FIFTH day of Christmas my micro gave to me FIVE compiler errors, FOUR loose plugs, THREE read/write errors, TWO keyboard bounces, And a mouse on the video screen.

On the SIXTH day of Christmas my micro gave to me SIX disk drive warnings, FIVE compiler errors, FOUR loose plugs, THREE read/write errors, TWO keyboard bounces, And a mouse on the video screen.

On the SEVENTH day of Christmas my micro gave to me SEVEN blown out fuses, SIX disk drive warnings, FIVE compiler errors, FOUR loose plugs, THREE read/write errors, TWO keyboard bounces, And a mouse on the video screen.

On the EIGHTH day of Christmas my micro gave to me EIGHT midi lock ups, SEVEN blown out fuses, SIX disk drive warnings, FIVE compiler errors, FOUR loose plugs, THREE read/write errors, TWO keyboard bounces, And a mouse on the video screen.

On the NINTH day of Christmas my micro gave to me NINE dodgy diskettes, EIGHT midi lock ups, SEVEN blown out fuses, SIX disk drive warnings,

FIVE compiler errors, FOUR loose plugs, THREE read/write errors, TWO keyboard bounces, And a mouse on the video screen.

On the TENTH day of Christmas my micro gave to me TEN modem time outs, NINE dodgy diskettes, EIGHT midi lock ups, SEVEN blown out fuses, SIX disk drive warnings, FIVE compiler errors, FOUR loose plugs, THREE read/write errors, TWO keyboard bounces, And a mouse on the video screen.

On the ELEVENTH day of Christmas my micro gave to me ELEVEN missing screen dumps, TEN modem time outs, NINE dodgy diskettes, EIGHT midi lock ups, SEVEN blown out fuses, SIX disk drive warnings, FIVE compiler errors, FOUR loose plugs, THREE read/write errors, TWO keyboard bounces, And a mouse on the video screen.

On the TWELFTH day of Christmas my micro gave to me TWELVE system bomb outs, ELEVEN missing screen dumps, TEN modem time outs, NINE dodgy diskettes, EIGHT midi lock ups, SEVEN blown out fuses, SIX disk drive warnings, FIVE compiler errors, FOUR loose plugs, THREE read/write errors, TWO keyboard bounces, And a mouse on the video screen.

Gerald Page,  
North Baddesley, Hants.

## Excellent

This is just a short note to compliment you on the noticeable improvements which your team has brought to PCW. The new format/typesetting is excellent, and the quality of your items of news, articles and reviews is even better.

It would appear that the only feature missing from PCW is an Adventure page. As you know, adventures represent 20 per cent of the software market, and they have an extremely loyal and dedicated army of followers.

Have you considered asking Tony Bridge, who used to write the Adventure Corner of PCW some time ago, to come back and start up

his Corner again? Tony Bridge is a much respected and knowledgeable authority on the adventuring scene, and his return to PCW would be much heralded.

On behalf of all the adventurers I urge, please transform PCW from a perfect magazine into an ideal one!

H J Mueller,  
The Adventurers Club Ltd,  
London NW2.

Editor's reply - we have no plans to reinstate Tony's column at present.



## Auto-boot

With regard to Andrew Stephenson's Comment in the December 3rd issue of *Popular Computing Weekly*, I would like to point out a few things which may help you:

1. On a basic level, applications can be auto-booted from an AUTO folder.

2. By placing a STARTUP program in an AUTO folder, Autoexec.bat type files can be emulated. There is a very good one in the public domain which has many powerful commands - such as file copying, setting the resolution, cursor on/off etc. This can be especially useful for copying files to ramdisks - the ramdisk program itself can be booted using the startup.prg.

3. If you really dislike mice so much, why not use a PC command shelf? There are many available, again easily found in the Public domain. A good one is PCOMMAND, which has everything you would expect, from batch files to prompt changes.

Matt Fender,  
London SE24.

## Problem solver

In issue 124 Vol 6 No 11 you printed a letter from D A John Wain - 'Basic instruction' - in from the old Spectrum No 51+ version +2, playing up *as usual* if any reader knew exactly what causes and how to cure it.

May I say that I had exactly the same problems, and I sent it to MASTERCARE Ltd in Doncaster who sorted it out very quickly indeed and the staff were really wonderful and very helpful, so if you could let him know and any one else who is having trouble with a Spectrum you will be doing them a good turn.

It seems that the problems mentioned are a regular thing on the 128+2, but Mastercare is in my opinion the place to have them sorted out. Their full address is Mastercare Ltd, Shaw Lane Industrial Estate, Udding Road, Doncaster, S Yorkshire DN2 1SQ.

Phil Houldsworth,  
Wootton,  
London SE18.

## Basic instruction needed

Since I made a recent purchase of the Spectrum +3, I have enjoyed using it but have written to Amstrad about the fact that a commonly used basic instruction in a sort routine is not accepted when trying to enter it in 128 BASIC mode.

I have had this line accepted by the Sinclair UK Spectrum that I am still using and is fact even by the plus 3 when in 128 mode. The program line no- 280 (F (x)-(x/10)) THEN GOSUB 230

I wonder if any of your readers or even Kenn G arreen has any idea why such a well tried basic instruction is not accepted by the +3 in 128 mode.

I thank you for an excellent magazine and I look forward to the return of more spectrum programs by your readers.

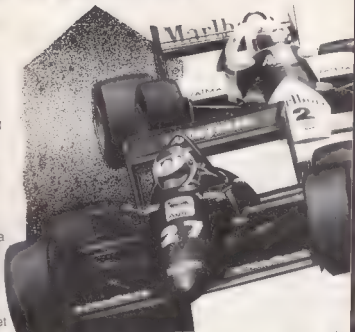
W A Hartley  
West Heath,  
Birmingham.

We are sorry that *Popular Computing Weekly* cannot guarantee to reply to all letters requesting a personal answer. It helps us enormously if readers are prepared to have general queries answered on these pages, so, if possible, please do not send SAEs.

# XMAS N°1?

Grand Prix Simulator is one of the sales success stories of this year. The Amstrad version was launched first and has spent 20 weeks at the top. This was followed by the Spectrum version which entered the chart at number one. Six weeks later it is still there. Now there is the Commodore 64 version which has the potential to repeat the story.

Grand Prix Simulator is endorsed by Johnny Dumfries who drove for the Lotus Formula 1 team in 1986 and is driving for the Jaguar world sportscar championship team next year. 'The game has a striking resemblance to Grand Prix driving in that the only way to get a fast lap time is to be very smooth and accurate. Being heavy handed or jerky may look spectacular but it slows you down.'



## ↓ ↓ PRESS RELEASE ↓ ↓

For years the pop music industry has created different versions or mixes of the same tune. The 12" single version, the LP version, the disco mix etc. Code Masters have taken this concept and applied it to computer games to create the Code Masters Plus range.

The A side of the first cassette contains the game. This is to the high standard that the public expect of Code Masters products. Side B contains the expert version of the same game. This is so difficult as to be unplayable until the standard version is mastered. The challenge that this represents will considerably increase the life and addictive qualities of the game.

There is also a second cassette which contains two sides of alternative scenarios in which either version of the game can be played. This extends the game further still.

Launch titles are as follows:—

Super BMX Simulator on the C64 by Richard Darling. Containing over a year's worth of enhancements and improvements over the best selling BMX Simulator. This game incorporates artificial intelligence and an innovative four player option. There are fifteen different scenarios in which it can be played.

Jet Bike Simulator on the Amstrad CPC and Spectrum by the Oliver Twins. This brings the excitement of overhead view racing to water, with the added attraction of 24 different scenarios.

Code Master Plus will be packaged in double crystal library cases along with a mini poster and stickers. The first titles will be available at the beginning of December. At £4.99 they are excellent value and remain a pocket money purchase.





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# Hey soldier

How can this be? A game with merely reasonable graphics and no sound is Game of the Week? The arcade players have had the limelight for two weeks; now it is the turn of the wargamer. The finest hour of battle strategy is at hand.

Rainbird has released *Universal Military Simulator*, or UMS, on the Atari ST and it is a dream come true for computer wargamers. The initial option to make is whether to play in high-resolution monochrome or in four-colour medium res, as the program supports both. Once under way you are asked for a simulation, either one of the pre-programmed ones or one of your own custom scenarios to load.

On the disc are the battles of Arbolita - Alexander the Great - Hastings, Marston Moor, Waterloo and Gettysburg. A chance to re-live or re-write history.

The most noticeable difference between UMS and an ordinary wargame is the display. A 3D grid map is used and while it is plain it is very effective, so that

except for gauging the overall position of forces in the middle of a battle. You can view the battlefield from any of eight compass directions to make sure that there is no sneak attack coming from somewhere.

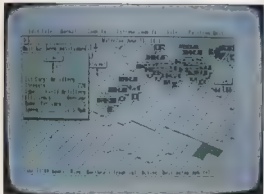
Now is the time that some of the power of UMS surfaces. You can zoom in for a view from any of the eight directions. This will show a section of the battle, approximately 40 per cent, and is useful when watching a flank attack take place.

Good though this may be, it improves. You can now go to the extreme zoom in menu for a very close-up shot. You can also select an extreme zoom cursor, which appears as a large area of flashing black squares, and manoeuvre in whatever area you desire.

Issuing orders to the lads is simplicity incarnate. The units are presented in turn with all their vital statistics like name, strength, type, efficiency, moves per turn and speed, and a grid of compass directions in which to move. Either click on the direc-

with a pointer for the final position. During a turn, which consists of one orders phase, eight movement phases and eight ranged weapons phases, the unit will attempt to move to the desired location. I say try, because if an enemy unit inflicts heavy losses it will start retreat-

double envelopment manoeuvre. You can design your own battlefields, your own armies, and re-create virtually any battle before the 1900s - the possibilities are endless. You can have Napoleon's army attacking the army of Alexander the Great, or the Americans at Gettysburg. All



you can see the hill on which Harold and his men assembled in 1066. All the units, divisions, squads or whatever you like, appear as flags stuck in the map.

The first view that you see is one of the entire battle map, with all the army units clustered together, not particularly useful

tion you want the unit to travel until all its movement points have been used or move on to another unit. While you are planning the route for a unit, a black appears on the map in the corresponding positions.

Once the route has been finalised it appears as a solid red line

ing. Units with a poor efficiency rating are also likely to call it a day much sooner as well.

Assuming that a unit gets into position relatively unmolested you can order it to defend, continue manoeuvring or charge and attack. When attacking there are no fewer than eight modifiers which are taken into consideration and they can be displayed at the end of every encounter, along with precise results and losses. Saxon heavy infantry, for example, may be serious trouble when they are sat on the top of a hill but if you get a division of knights on the plateau and charge them from behind, those Saxons are dogmeat.

Some of the options available every command phase are to swap sides, get the computer to play either combatant or, in fact, force the computer to play in a certain style. This latter option is very useful if you are trying to re-create history. You can force the battle computer to defend or, when on the attack, try a left flank, right flank, central or

you have to do is visit the library, beef-up on all the units, maps and positions and you can re-create that battle at home. Admittedly it is a fair amount of work but the opportunity is there.

When you consider exactly how much UMS gives you, it is astonishing. There are only two faults worth mentioning - you cannot see wooded zones until you run into them. Second, serial divisions are not handled that well, limiting the scope for World War 2 scenarios - but not much - although you can easily create air strikes where the aircraft are untouchable.

Universal Military Simulator represents the dawning of a new age for computer wargames. Excellent value, hugely entertaining and a truly fab game. This is worth selling your granny for.

Reviewer Duncan Evans  
Rating 19  
Micro Atari ST  
Price £24.95  
Supplier Rainbird

Your complete guide to all the software released this week



## Amstrad CPC

**Program Gary Lineker's Superstar Soccer** Price £8.95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.

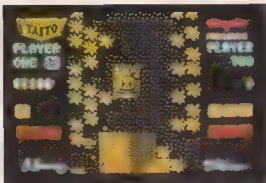
Classy Amstrad version of football player management game reviewed two issues ago. One minor problem is that on two-player mode the game keeps pausing. The solution is re-define the keyboard controls. That aside, it is a very good reworking of an old concept.

**Program Mask Two** Price £8.95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.

More adventures in cartoon land. The attractive graphics make this one for the younger player. Deserves to do well.



continued on page 18



## Flying Shark

One of the bigger hits in the arcade this year was the Taito *Flying Shark*, a vertically scrolling shoot-'em-up and one of the best of the genre. Firebird snapped up the licence and now the fast and furious coin-op conversion has arrived in Spectrum format. C64, Amstrad and ST versions will follow.

In the grand tradition of vertical scrollers, the plot is simple and the action thick and fast.

The war is coming to an end and High Command has recalled you, Mr Ace, to fly one last lone mission against overwhelming odds. As usual, the fate of mankind rests on the outcome, so at least make sure you have a good joystick.

Panels down either side of the screen impart useful information, while the central playing area is depicted in glorious monochrome or, to put it another way, yellow and black on the first level.

Tanks and other ground based targets motor around, firing away, while wave after wave of enemy fighters scream into the fray. The backgrounds are very detailed, the ships in the harbour in particular, and certainly redeem the use of only two colours on the playing field. With your fighter and the opposition being fairly small, a great deal is crammed in.

Periodically, flashing squares float down the smoothly-scrolling screen; fly over them and you are rewarded with extra firepower or smart bombs.

Converted by Graftgold, which recently defected from Hewson, *Flying Shark* on the Spectrum is a surprisingly good implementation of the coin-op classic and certainly more entertaining than watching John Wayne films during the holiday period.

Reviewer **Simon Evans**

Rating 15

Micro Spectrum

Price £13.95

Supplier Firebird.

## Bonecruncher

Here's the obligatory silly story of the week. You play the part of Bono, a dragon on a nice little earner running a kind of Turkish bath for monsters. The secret of your success is the fact that your castle is full of skeletons whose bones can be boiled to make soap.

Bono has the soap monopoly in Dragonville but life is never that simple. As you roam round the castle collecting skeletons there are many hazards to be avoided, not least the Bono-eating spiders. Bono-eating monsters and Bono-killing traps.

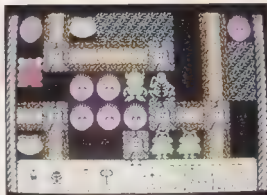
Beneath the ludicrous story line, *Bonecruncher* is straight out of the Repton school of gaming. The screen designs are instantly recognisable, the animation system is identical, and the game design almost Repton with frills.

One innovation is Bono's sidekick, Foxy, a lumbering dummy who can be employed to fend off monsters and spiders, and generally watch the chief protagonist's back.

Technically, *Bonecruncher* represents an advance.

It is challenging, cute and good fun but I thought the Repton series was marvellous and harbour a sneaking resentment at something so obviously Rep-

friends. The climax is Julius Repton's assassination in the public baths by an upstart dragon and the hero expires with the immortal words: "U2, Bono?"



tion without the eponymous hero.

You also have to wonder how long Superstar can keep milking this idea.

Therefore I offer this plot free - Shakespeare's *Julius Repton* in which a great hero is done down by the ambition of his former

Reviewer **Peter Worlock**

Rating 14

Micro Commodore 64/128

Price £8.95 (tape), £11.95

(disc)

Supplier Superior Software.

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COLOUR	699.00	779.00	779.00	779.00	779.00	779.00	779.00	779.00
1640	799.00	879.00	879.00	879.00	879.00	879.00	879.00	879.00
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1-5 Gobble, gobble, gobble. A turkey. Avoid at all costs.  
6-10 Serious flaws make this one for the committed only.  
11-15 Good, but not that good. Should be worth the reads if you like that sort of thing.  
16-20 So good it makes good look bad. Run down to the shop and buy immediately.

## Software guide continued

◀ continued from page 15



### Atari ST

**Program Invasion Price \$14.95**  
**Supplier** Microdeal, PO Box 68, St. Austell, Cornwall PL25 4YB.

Just when your sprogs were getting confident that they could get away with playing *Star Wars* and *Backlash* all the time, give them a shock, with one of these three Michtron-sourced educational programs.

*Invasion* is an animated learning game for ages from five upwards which teaches improved typing, improved vocabulary and mathematics, skills.

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**Supplier** Microdeal, PO Box 68, St. Austell, Cornwall PL25 4YB.

One definitely for the younger generation. Designed to teach three-to-six-year-olds reading and typing.

continued on page 20 ▶

## Eye

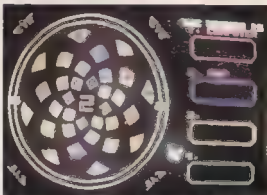
**E**ye is one of those board games which emerge regularly in be greeted as the greatest thing since Chess/Monopoly/Diplomacy any other game of which you can think. The fact that the old favourites continually grind the upstarts into the dust is neither here nor there.

Not having played the board game, I cannot comment on the chances of *Eye* in that field, but the computer version is a bit of a no-hoper. The board is difficult to explain but very simple to use. It comprises two rotating circles of multi-colour squares lying underneath a series of spiral arms, with the result that when the circles are rotated all the squares on the board change colour.

The circular and spiral nature of the layout give the *Eye* board an odd appearance compared to the familiar grids of chess and other games but you soon become used to it. You can play with up to four human players, or challenge the computer.

Gameplay starts with each player taking turns to place one of his counters on any vacant square.

Once all the counters are positioned you move your counters with the aim of occupying the squares of your colour while trying to prevent your opponent occupying his squares. Once the



counters are positioned you can move only adjacent squares, and you cannot jump over an intervening counter.

The complication arises because of the rotating board. During any turn, you can use one or two moves to change the colours. This is what gives the game its elements of strategy and a real chance to beat your opponents.

The computer version offers various enhancements, such as the ability to change colours at random throughout the game. This is designed to make the game more difficult but implies strongly that the computer is a doddle to beat at the ordinary game.

The screen display is functional but not outstanding on the C64 and I found one or two

shortcomings in the programming. Joystick control was distinctly dodgy and there appears to be no way to leave a game before the end. Further, for something which purports to be as rich in possibilities as chess, the game is surprisingly sparse and offers none of the features of virtually all computer chess programs. There is no suggested move facility, no ability to switch sides, no way of determining the computer's playing level. How about a game of chess?

Reviewer Peter Worlock

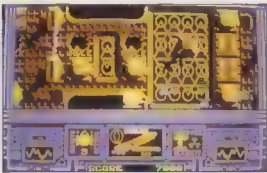
Rating \*

Micro Commodore 64/128

Price \$9.95 (tape)

\$14.95 (disc)

Supplier Enderbury Games.



## Skyriders

**S**kyriders is a new piece of software for the ST. The company behind the game, Creation, is also a new software house.

*Skyriders* clearly is inspired by that classic game for the Comm-

dore 64, *Uridium*. Unfortunately, the gameplay of *Skyriders* is nowhere near so good as *Uridium*.

*Skyriders* is a vertical shoot-'em-up. The story line concerns Earth being attacked by radiation. Scientists have noticed a dramatic increase in the Earth's

natural radiation levels, the source of which is away in deep space.

The game incorporates some pleasant music and also a few sampled voices for added enjoyment.

The only major disappointment with *Skyriders* is the fact that what could have been much better than *Uridium* is not so good, bearing in mind the tremendous potential the Atari ST offers.

The scrolling could have been much smoother but, as the game is a budget release, as an overall package game it is worthy of a few days' playing.

Reviewer Leslie Bander

Rating 12

Micro Atari ST

Price \$14.95

Supplier Creation



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Software guide  
continued

◀ continued from page 15



## BBC B

**Program Bone Cruncher** Price  
\$9.95 Supplier Superior Software,  
Regent House, Skinner Lane, Leeds  
LS7 1AX.

See review elsewhere in this maga-  
zine. The BBC version is easily as  
good as the C64 one.

**Program The Bug Byte Collection**  
If Price \$7.95 (disc) Supplier Bug  
Byte, Victory House, Leicester  
Place, London WC2E 7NB.

Collection of four games - *Cricket*,  
*Jack Attar*, *Ice Hockey* and *Hauki-  
dory*, which were never worth a  
full price tag initially. Reasonable  
value now.



continued on page 23 ▶

## Sundered Sword

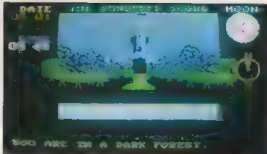
**R**ed Rat is pretty busy at the moment. Not content with its first ST games, it has now moved into the Spectrum market as well. *Sundered Sword* is the offering, it's an adventure, and it's just a little bit different than the run of the mill pixie quest.

Having been rejected by the Wizard's Guild, due to lack of practical experience, you apply for a suspiciously easy sounding mission to return a magical sword from another dimension.

Your employer was trying to mend a sword that was broken in a scrap with a balrog, but instead he scattered the pieces all over a parallel dimension. You are given a gold coin, a page from a pocket diary, and a battered piece of parchment (actually a magical map), and then without further ado, or any chance to change your mind, zap! You find yourself in unfamiliar surroundings.

The first objective is to take your bearings, the magical map is actually supplied as part of the packing for the game. In the distance you can see a tower rising from the countryside, while over in an easterly direction lies the town of East View.

Each location is illustrated, and very well too. The pictures



are quite important, specifically because the text descriptions of the locations are somewhat terse.

Although this is an adventure game, there are distinct role-playing characteristics incorporated. You have certain attributes which affect things like how much weight you can carry (rather than number), how people react to you (charisma), and number of hit points.

The interesting elements come in the form of the character interaction, where you can talk to any of the myriad personalities wandering about the land of *Sundered Sword*, and magic spells. Before you can cast a spell you must assemble the correct components first. Char-

acters in the game have grimaces in their possession which contain spells for getting back home with the sword.

You can also pray, and if you do it at a hinge on a Salet's feast day, that Salet may offer some help. But then again he might not.

*Sundered Sword* is undoubtedly an impressive debut into the Spectrum market by Red Rat, and represents one of the more enjoyable adventure games to emerge of late.

Reviewer Duncan Evans  
Rating 15  
Micro Spectrum  
Price \$7.95  
Supplier Red Rat.

## Inside Outing

**E**ver since *Fairlight*, The Edge has been doing some great things with 3D games, but *Inside Outing* must represent a new step forward in the complexity of the display. You play a burglar hunting for 12 jewels hidden in what at first appears to be a fairly normal house. The presence of man-eating canaries and mice soon alerts you to the fact that not all is as it seems.

The display is the familiar viewpoint from one corner of the room, somewhere around ceiling height, but *The Edge* has gone to extremes in the amount of detail. Every room is crammed with furniture and decoration, virtually all of which can be moved. In the library there are books on shelves, in the kitchen there are cupboards which can be opened and any object small enough to carry can be picked up and moved to another location.

To keep you on your toes there are also secret alcoves and hidden passageways. It follows from all this that *Inside Outing* is a real challenge which will require hours of play before you are

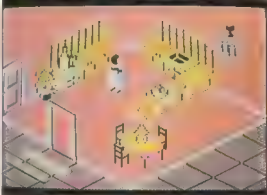
close to completing it. Every object needs to be investigated simultaneously you avoid the hostile wildlife.

The graphics are superb and really the star of the show, allowing you to move items with pixel accuracy or to walk between and around objects which give a high degree of solidity and realism. There are also many puzzles to be solved.

Among this type of game I preferred the imaginative game-

play of *Batman*, or the fantastic weirdness of *Lordiel's MGT*, but *Inside Outing* is another good example of the genre. If you like this kind of 3D graphics adventure, you will love *Inside Outing*.

Reviewer Peter Wurlock  
Rating 18  
Micro Commodore 64/128  
Price \$9.99 (tape), \$14.99  
(disc)  
Supplier The Edge





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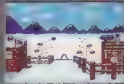


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## Gryzor

Earth has been invaded again but, given the state of the place I am not sure why any intergalactic beings would bother - unless they like acid rain.

Deep in an uncharted region the aliens, the Durrn from the planet Suna, have set up shop and assembled an atmospheric control plant. The plan is to produce another ice age.

The astute will realise that *Gryzor* is the latest Konami arcade game to be licensed by Ocean. Armed with a machine-gun and a bag of 10 pence pieces, you must storm through the three sections, each a separate level, and destroy everything of importance.

There is plenty of scenery in *Gryzor* because the first two sections have three scenes, while the last has two.

Part one, scene one, consists of an enemy outpost, deep in a jungle, surrounded by all manner of nasties. Booby-trapped bridges, waterfalls and split-level pathways are some of the features. Blow your way through a wall and you are into scene two.

The perspective changes there as you charge down heavily-defended tunnels towards a control



room. Scene three consists of blowing-up the control room.

Part two follows the same lines, with part three differing in that the conclusion is at hand. Destroy the Durrn mothership and the day is won - Earth is free again.

A machine gun only is scant protection against the alien hordes, so extra weapons are available along the way. Scatter gun, laser gun and a barrier are what you need to acquire to progress very far.

Although the sound effects are very basic, the graphics certainly

compensate. Detailed and colourful, it was little surprising to see a flip-screen method in operation rather than attempting to scroll the screen. It also means that your character is fast on his feet and can move freely.

*Gryzor* deserves to be a hit and with the large amount of scenery to plough through, good, value.

Reviewer Duncan Evans  
Rating 15  
Micro Amstrad CPC  
Price £8.95  
Supplier Ocean

Software guide  
continued

◀ continued from page 20

## Commodore 64

Program *Rigel's Revenge* Price  
£2.99 Supplier Bulldog, 6-10 Paul  
Street, London EC2.

Adventure game with graphics and a soft setting. Can you stop *Rigel's Revenge*? It is worth trying.

Program *Street Hassle* Price  
£9.95 Supplier Melbourne House.

Hysterically funny and fairly sick game which involves head-butting and throttling grannies, blind men and evil professors. Even better than the Spectrum version reviewed two weeks ago.

Program *Masters of the Universe*  
Price £2.99 Supplier Americana,  
8-10 Paul Street, London EC2.

It did not take very long for this decidedly mediocre game to find its way down to budget level. Now more sensibly priced, it should be worth it.

Program *Frankie Freddie* Price  
£2.99 Supplier Top Ten, Maynard  
International Ltd, 12 Chiltern  
Enterprise Centre, Station Road,  
Theale, Berks RG7 4AA.

The CSD Sparklers range emerges from the long night once more. The quality of many of the programs leads you to wonder why they were rescued at all. *The Vikings* is not too bad, but neither is it particularly good and certainly not worth £3.

Program *Frankie Freddie* Price  
£1.99 Supplier Top Ten, Maynard  
International Ltd, 12 Chiltern  
Enterprise Centre, Station Road,  
Theale, Berks RG7 4AA.

Fairly dismal platforms and ladders game. The only redeeming feature is the music but sonics do not a good game make - not on their own.

Program *Space Relief* Price £1.99  
Supplier Top Ten, Maynard  
International Ltd, 12 Chiltern  
Enterprise Centre, Station Road,  
Theale, Berks RG7 4AA.

At least this looks like a reasonable game. A good buy for shoot-em-up fans.

continued on page 24 ▶

## Enlightenment - Druid II

Just when you thought it was safe to go back in the forest. Just when you thought the days of trial and tribulation were over, Acanthor is back. And this time he's not happy.

*Enlightenment - Druid II*, the sequel to *Druid III* no doubt, marks the return of the evil one, complete with his legion of demon princes.

Quite how the scum-sucker has made a return after you expelled him from the land of Belora is not made clear, but you have soon got more pressing things to do than ponder it.

For starters the occupants of your local village have been turned into slavering zombies, although they looked suspiciously like Chinese waiters to me.

You have a spell book for summoning elementals, which will stroll around at your bidding, savaging your enemies. Other spells include *Wall of Fire*, *Wall of Water*, *Deathlight*, *Recharge*, *Fireshield*, *Turn Away*,

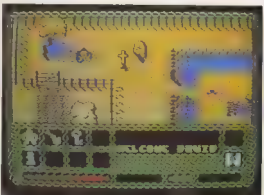
*Teleport*, *Infra-vision*, *Door-blast* and many more.

The playing is divided into various sectors, each with their own colour and occupants. The variety of the design makes the trekking around much more palatable, especially since the four way scrolling is quite fast, and your druid is nimble on his feet.

If you fancy more of the same then *Enlightenment* is not going

to disappoint you. If you are new to the scenario then it is also recommended. Here is your chance to wear a full magic jacket.

Reviewer Duncan Evans  
Rating 15  
Micro Spectrum  
Price £7.99  
Supplier Firebird





## Software guide continued

◀ continued from page 23

**Program Firetrap** Price \$9.95 (tape), \$14.95 (disc) Supplier Activision, 23 Pond Street, Hampstead, London NW4 2PX.

Much better version of the Data East coin-op in which you climb burning skyscrapers, put out fires, and rescue those trapped inside.

**Program Nightmare** Price \$8.95 Supplier Activision, 23 Pond Street, Hampstead, London NW4 2PX.

Heartily-recommended variation on the standard adventure game. Based on the ITV series of the same name, it should appeal to event those who do not watch the show.

**Program Defender of the Crown** Price \$14.95 Supplier Mirrorsoft, Athene House, 66-74 Shaw Lane, London EC4P 4AB.

Two-cassette version of the fabled Cinemaware product. If you need a good reason to buy a disc drive, this is it. Having to load the individual sections over and over again is incredibly tedious.



## IBM PC/COMPATIBLES

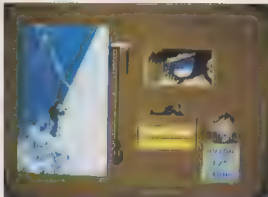
**Program Yes Prime Minister** Price \$24.95 Supplier Mosaic, Gorley Firs, South Gorley, Fordingbridge, Hampshire SP6 2PS.

Very true to the series programme but lacks variety and long-term appeal. One for only the Bicker addicts.

continued on page 25 ▶

## Chamonix Challenge

Infogrames produce some odd games. They are usually stylish but distinctively against the grain of current software trends.



Even so, the latest release is well off the beaten track, although it follows in another game's footsteps. Mountaineering is what it is about. A Richard Sheppard game for the Spectrum in 1983 was based on a similar idea and that was a flop.

The game is split into two sections, preparing for the climb and the climb. The first thing to do in the preparation stakes is select a route - ■ are all marked for difficulty - up the mountain.

Believe it or not, the next step is to prepare a rucksack.

The rucksack is full initially, so if you want to put a dozen packets of soup you have to empty it first. This feature will really make sense only to those

the flat, although it wastes some time.

Going up rock faces is something else, though, as it involves selecting and moving limbs, moving round and hoisting yourself up. The state of your hands dictates whether or not you have a strong grip on the rock. If no hand appears there is no grip, whereas if the hand flashes it represents a weak grip, one which will send you plummeting if you do not move quickly.

There are all kinds of features to make the game more realistic, like sunglasses, temperature, fatigue, hunger and thirst, camping and manipulating objects. I liked the representations of the mountain and the distinctively French climber. Everything looks clear and colourful and adds to the impression that although this is a serious strategy game, it is not to be taken that seriously.

Will *Chamonix Challenge* go the same way as the aforementioned Richard Sheppard game? I hope not because if you stick with it and are prepared to get into the whole concept you will find this is one mountain worth scaling.

Reviewer Duncan Evans

Rating 14

Micro Atari ST Amstrad CPC

Price \$8.95 (tape), \$14.95 (disc)

Supplier Infogrames

## Combat School

The Konami offices must be very busy at the moment, what with all the coin-op licenses that they are signing. One of the latest, *Combat School*, has gone to Ocean. The object is simply to rise through the ranks to become a Captain, while successfully completing seven gruelling tests of strength, skill and patience (it's a multi-loader). Alright, all together, 'I wanna be your drill instructor...'

The events are a little different than the normal 'Sports Games' stuff, but all of them have been seen in one form or another.

The firing ranges are simple fun, but nothing special, while the fight instructor section pays homage to all those martial arts games. The full list of events is assault course, firing range 1, iron man race (caneing in other words), firing range 2, arm wrestling, firing range 3, fight instructor and chin ups.

I found that *Combat School* has just too many things going against it for it to become an enjoyable experience. The graphics are moderate two colour, none of the events are particularly special, and the multi-load system is a drag.

While it is obviously better in the other formats, *Combat*

*School* on the spectrum simply lacks any incentive to play it.

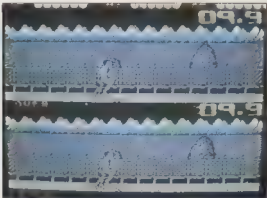
Reviewer Graham Allison

Rating 9

Micro Spectrum, C64 disc/Amstrad CP1

Price \$7.95 (\$12.45 \$9.95)

Supplier Ocean



## Mask II

Comic book time for the kiddy-winkies. The brave agents of *Mask* - Matt Trakker commanding versus the unspeakably evil Venom, together with all the trappings of the genre: secret headquarters and a crop of whizzo vehicles including a motorbike which turns into a helicopter.

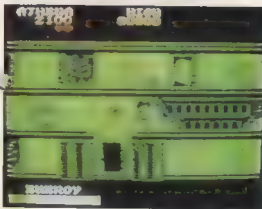
It all looks promising, especially the opening sequence where you choose three of *Mask*'s five agents to handle one of three missions. The missions take place in desert, mountains and jungle and the different terrain is supposed to govern your choice of *Mask* vehicles. The selection process is very well done, with some great graphics. Unfortunately that does not carry into the game. The graphics are big and chunky, which makes the screen very cramped. The backgrounds are satisfactory, but the programmers have made no attempt at realistic displays: the animation is crude and despite all the talk, about different terrain and vehicles I found all three missions to be equally unplayable.



Although the inlay goes to great length about the different capabilities of the *Mask* hardware, you would be hard-pressed to find supporting evidence on-screen. Your vehicles are supposed to be equipped with lasers, bombs, missiles and even an anti-matter ray. But what happens on-screen is that everything fires what looks like bowling balls. Fortunately the evil agents of Venom are no better-equipped. Enemy helicopters drop bowling balls from above, while enemy submarines launch sea-to-air bowling balls.

The idea behind *Mask* is good but it needed better implementation than it receives. Although the dressing up is almost faultless, the game is a standard horizontal scroller with poor graphics and animation. It has been done a hundred times before - and done better.

Reviewer Peter Worlock  
Rating 12  
Micro Commodore 64/128  
Price \$9.00 (tape), \$14.90 (disc)  
Supplier Grendin.



## Psycho Soldier

The heroine is back, monochrome display is back, platforms and ladders are back, and the multi-load arcade game is back. *Psycho Soldier* marks the return of software's sexiest pixels, Athene the warrior woman.

Some aspects of the format are more than a little tired, but as the words of the song go, 'It ain't what you do, it's the way

that you do it.' And this is the case here, a couple of nice touches add that spark that this type of game requires.

Athene has been whisked (not shaken?) away to an alternative universe where demons hold the human race in thrall. The task is to hack your way through the demon borders to the worlds core where the demon lord has its apartments.

Athene has a number of weapons, not the least of which is a

set of twirling discs which circle her. Unfortunately they don't go that fast so it is easy for the demons, with a well timed run, to duck underneath and give her a spot of bother.

Still, armed with a laser and fire bombs you have ample firepower to retaliate in kind. Scattered along the way are extra bombs and energy.

There are six sections containing thirty screens each, but if you lose your last life you have to go all the way back to beginning and rewind the tape accordingly. Bad news if you don't have a tape counter on your cassette deck. It can be irritating at times, especially when you just want to get on with it. On the plus side it means that it will be some time before you master *Psycho Soldier*.

Good fun, but you'll need plenty of perseverance to get the best out of it. *Psycho Soldier* is good. But not that good.

Reviewer Duncan Evans  
Rating 12  
Micro Spectrum  
Price \$7.95  
Supplier Imagine.

## Software guide continued

◀ continued from page 24

**Program** *Guild of Thieves* Price \$24.95 **Supplier** Rainbird, 74 New Oxford Street, London WC1A 1PS.

Excellent Magnetic Scrolls adventure in which the object is to bag everything in sight. If you have an EGA card there are 29 illustrations to savour otherwise it is text only.

## Spectrum

**Program** *Solar Fire* Price \$7.95 (main game) \$3.95 (expansion) **Supplier** Astros Productions, 34 Friarston Road, Timperley, Manchester WA14 3AP

Minor software house production brings you a one-player, fast-action tactical game where you control six legions against a mixed force of aliens. It sounds interesting enough but the inlay card was the funniest thing I have seen all week. Space, the plastic frontier.

**Program** *Matchday II* Price \$7.95 **Supplier** Ocean, 5 Central Street, Manchester M2 6NS.

Weakest version of very entertaining football game which gives you a league and cup competition to play in.

**Program** *Arc* Price \$2.90 **Supplier** Top Ten, Maynard International Ltd, 12 Chiltern Enterprise Centre, Station Road, Theale, Berks RG7.

A game based on a book, both written by Frank Oliver. Brother and sister are pitched hand-to-hand into a battle with the forces of evil. Interaction with other characters is the keystone to the game.

**Program** *SAS Thunderflash* Price \$2.99 **Supplier** Top Ten, Maynard International Ltd, 12 Chiltern Enterprise Centre, Station Road, Theale, Berks RG7 4AA.

After some of the criticism this received last time I am staggered to see it back in the shops. Truly appalling game and to charge \$3 for it is ridiculous.

**Program** *Galactic Games* Price \$9.95 (tape), \$12.99 (disc) **Supplier** Activision, 23 Pond Street, Hampstead, London NW3 2PN.

Have we not had enough sports games? Apparently Activision does not think so. At least this time it is completely different in that you

continued on page 26 ▶

## Software guide continued

◀ continued from page 25

play a worm. The competitions include psychic judo, space hockey, head throwing and the metamorph marathon. If you think it is all a big laugh it is worth buying.

**Program** *Samurai Price* \$9.95  
**Supplier** Activision, 23 Pond Street, Hampstead, London NW3.

The game which was so singularly savaged last week emerges in Spectrum format. The three-player option is there and it is a reasonable game. My only reservation is the price, which is a little too high.

**Program** *World War 1 Price* \$7.95  
**Supplier** Lethlorien, Victory House, 14 Leinster Place, London WC2H 7NR.

Lethlorien has been quiet of late, so the release of this war game is very welcome. The game works on two levels. Either you can outline the overall trend of a campaign and sit back and watch the action unfold, or drop down to tactical level to control each aspect of the battle. The graphics are not impressive, compared to the latest releases from say, CCS, but it is a good game nevertheless.

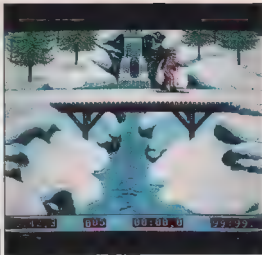
**Program** *Starplider Price* \$16.95  
**Supplier** Rainbird, 74 New Oxford Street, London WC1A 1PS.

Spectrum +3 version of the 3D air-to-air and air-to-ground combat spectacular. For impoverished +3 owners it represents a fair measure of Christmas cheer.

**Program** *Phantom Club Price* \$7.95  
**Supplier** Ocean, 6 Central Street, Manchester M2 6NS.



Although it looks just like another Ultimate-style 3D adventure, the plot is bizarre to say the least. You become a member of the Phantom Club and attempt to put the heroes of the club back on the straight and narrow after they have been corrupted by the wicked Zarg.



## Winter Olympiad '88

Does the prospect of skiing down a steep alpine slope send a tingle down your spine? Do you have the nerve to take off into the chilly mountain air on the ski jump? Do you have the stamina for cross country skiing and shooting?

Do you have the co-ordination for the slalom and courage for the bobsled. Do you want to read any more of this review and finally, do you have the money to

do all this in Calgary? (No, Ed)

The answers are a string of yeses and a no then good news has arrived in the form of *Winter Olympiad '88* from Tynesoft. You can take part in all of the events mentioned previously, as a member of your favourite country, unless it happens to be Nicaragua.

The downhill is one of the better events. You ski down the slope in 3-D, but with a skier actually on the screen. Your viewpoint is a couple of metres behind. Dodge the trees and

stumps, jump the rocks and pray.

The animation and graphics are first class and completing the course is a real challenge.

The graphics are of a high quality all round, with the singular exception of the bobsled event. For some reason on the ST version this is remarkably bland and unexciting. On the C64 it looks like what you'd expect, and plays just as well.

The slalom is where you dodge in and out of the gates as you make your way downhill. The skier can go very fast, and as he is very responsive as well, you will only achieve decent results with a great deal of practice. Compared to the equivalent event in US Gold's *Winter Olympics*, which was virtually unplayable, this is a great improvement.

Winter Olympics is the competition as far as *Winter Olympiad '88* is concerned, and if you already have the older program then there is not that much incentive to buy the Tynesoft product. If you don't though, give it a try. There's even a competition with the prize being a trip to Calgary, so you could end up there for real anyway.

Reviewer Duncan Evans

Rating 14

Micro Atom ST/C64/Spectrum

Price £12.95/\$9.95/\$7.95

Supplier Tynesoft

## Salamander

Nemesis was the game responsible for all those horizontal scrollers with extra weapons. Although it was the first, it was rapidly superseded in terms of slickness and playability.

Kosumi has struck back with *Salamander* though, the sequel to Nemesis. The first conversion of the coin-op has arrived in Spectrum format, not the best computer for this sort of game it has to be admitted.

Completely blowing away an attack wave leaves an extra weapon in floating space. You'll need to collect as many as possible to even get past the first obstacle; a pair of waving probe-ance that completely block the passage.

Go faster stripes, lasers, multiple shots, auxiliary pods, and lots of other weapons of destruction are all available.

The scrolling of the screen in the original game has been improved upon, but the problem is

the speed of your ship. It's slow to say the least. You can pick up extra speed, but it really is a case of having to nobble the attack wave that's going to produce the

trium, but they suffice.

All things considered, a very worthy successor to Nemesis and quite a good arcade thrum as well.



go-faster podule. The enemy fighters are rather forgettable, but some of the scenery is unusual and eye-catching.

Sound effects are not all that you might expect out of a Spe-

Reviewer Graham Allison

Rating 13

Micro Spectrum

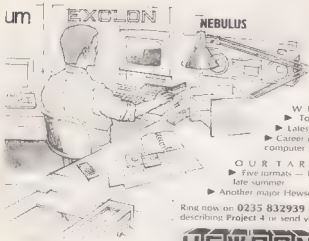
Price \$7.95

Supplier Kosumi

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## Be square

What have the third of August 1924, eighth of May 1929, and the thirty-first of July 1961 have in common? The answer is that they are all 'square' dates.

For example, if the first date of the three is typed out and the dividing dots are removed, we get the number 381924. This number has an integral - whole number - square root (61) so the date can be said to be 'square'.

Not many square dates have occurred this century but can you find the last time we had such a date. Also, when is the next such date?

## Crossed lines

Take a sheet of paper and write all whole numbers from one to 1,000 inclusive.

Now: cross off all numbers which contain a zero  
cross off all numbers which contain the digit '2'  
cross off all numbers which contain the digit '4'  
cross off all numbers which contain the digit '7'

cross off all numbers which contain the digit '8'

When you have done that, continue as follows:

cross off all numbers that are a multiple of 3

cross off all numbers that are a multiple of 5

cross off all numbers that are a multiple of 7

Alternatively, write a computer program which performs these tasks, but can you say how many numbers will remain uncrossed?

### Solution to Puzzle December 10-16.

Answer: On each of the six days I read the following number of pages:

Sunday	61	61
Monday	49	110
Tuesday	4	114
Wednesday	36	150
Thursday	36	136
Friday	235	411

The number in the second column is the total number of pages read throughout of each of the days.

### Solution:

The program tests all possible values for Z, which represents the number of pages read on the first day.

For each of the five days after that the number of pages read is equal to the square of the sum of the digits of the page number reached so far, so the FOR/NEXT loop - lines 30 to 41 - computed this final total. Any starting values which total 411 are printed out.

The digital sum is calculated at lines 40 to 70 by scanning the string N\$ and adding, the sum of each of its digits. Only one solution is possible.

```

10 Z=1
20 N=Z: N$=STR$(N): L$=N$
30 FOR DAY=1 TO 5
40 D=0
50 FOR F=1 TO LEN(N$)
60 D=D+VAL(MID$(N$,F,1))
70 NEXT F
80 N=N+D: D: N$=STR$(N): L$=L$+
  3+"(" +STR$(D)+")+"
90 NEXT DAY
100 IF N=411 THEN PRINT L$
110 IF Z=411 THEN END
120 Z=Z+1: GOTO 20

```

## MASTERTRONIC COMPETITION

It's Christmas time again, and as Christmas is about giving, those kind folks out there at Mastertronic have decided it's time for the readers at *Popular Computing Weekly* to be part of their seasonal celebrations.

We're giving away, 50, yes 50 copies of Mastertronic's latest and utterly fantastic games. There are four games you can choose from. The games are Bosconian, Agent X 2, Motos and Angle Ball.

All you have to do is answer 3 easy questions, say what machine you've got and send in a postcard to:

Mastertronic's Xmas Giveaway, *Popular Computing Weekly*, Focus Magazines, 3rd Floor, Greencoat House, Francis Street, London SW1P 1DG.



### The questions are:

1. Which American software house has Mastertronic recently signed up with?
  2. What is the connection between Mastertronic and Richard Branson?
  3. Name one of Mastertronic's affiliated companies.
- Entries must arrive by last post

January 5th 1988. Judges will be Francis 'Santa' Jago, Executive Editor, and John 'Rudolph' Brissenden, Deputy Editor of *Popular Computing Weekly*. The judges' decision will be final and all winners' names will be published in a future issue of *Popular Computing Weekly*.

# X minus six and counting...

With only six shopping days left, Popular Computing Weekly presents the definitive hardware and software buyer's guide for Christmas 1987 by David Lester.

It hardly seems like twelve whole months since that expensive time of year was here last, and yet Christmas is just a few days away, now. Which is good news for almost all vendors of anything to do with home computers. Christmas sees sales of hardware and software rise dramatically every year, as parents and grandparents search for a new idea for something to give Johnny.

Choosing hardware is never easy, but the choices are even wider than usual this year - the standard home computers are still going strong, while new ones based around more powerful 16-bit microprocessors are taking off too. And no longer do prices make the decision for you - most of the computers on sale can be had for a few hundred pounds.

The marketplace is well and truly dominated by three firms. **Amstrad, Atari and Commodore**, which between them will almost certainly carry off 90 per cent of all sales. Of these, Amstrad is probably the leader of the pack in volume terms, with a mammoth selection of different computers to choose from.

For the first time this year, buyers face a strategic choice between a machine based around an 8-bit CPU and one based around a 16-bit CPU. To cut a very long story extremely short, the 16-bit CPUs are faster and more powerful - and allow programs which would not be practical on the 8-bit micros. The **Spectrum, CPC** range, and **Commodore 64/128** represent the 8-bit scene, while the **Atari ST** and the **Amiga** battle it out for the 16-bit market. One of the more obvious differences is that the 16-bit micros use a mouse controller, and a system of pull-down menus and icons to control the basics such as saving and loading in programs, while the 8-bits still require actual commands to be typed in.

## Amstrad/Sinclair Spectrum range

Since Amstrad bought **Sinclair Research**, the Spectrum computer has undergone several redesigns, and is now available under various different guises. The newer models are the ones to go for really, although there are still some excellent bargains to be had on older models by shopping around. The **Plus 2** has a built-in cassette recorder, and retails at £139, while the **Plus 3** has a disc drive instead of the recorder, but costs £190; both have 128K RAM, and are bundled with several games and a joystick. The disc drive is a mixed blessing, though, as very few firms sell software on disc for the Spectrum, so that to use most software with the micro, you will need to attach a third party cassette recorder; if disc software does become more widely available, it is also likely that it will sell for several pounds more than the tape equivalent.

The Spectrum is cheap, and has more software and peripherals available for it than any other home micro. It is now five years old, and is thought by many to be nearing the end of its life. Nonetheless, there are many thousands of owners, and all of the main software houses write for it.

It is also fortunate in having slightly cheaper software than its two main competitors, the Amstrad CPC range and the Commodore 64/128 computers - and it has probably the widest range of good budget software (£1.99 and £2.99) of any micro, too.

It is a strange beast in that its main use now is for games, and yet its graphic facilities aren't as good as the CPC or Commodore range, and software only tends to use the one channel sound of its older incarnations.

For most serious uses the Spectrum is unsuitable, due mainly to its unorthodox 82-column screen (the industry standard is 40) - but there are some good word-processors on sale for it, as well as other applications and languages such as Pascal.

## Amstrad CPC range

These were Alan Sugar's first computers, and have been very well-received. The CPC comes with a colour or monochrome monitor included within the price, and either 64K RAM and a built-in cassette recorder (the CPC 464 at £299) or 128K RAM and a disc drive (CPC 6128 at £399). Both prices are for colour monitor, mono monitor



Spectrum Plus 2

versions are \$100 less. Another big advantage is that it is a much cleaner set-up than almost any of the other computers on sale: the monitor connects to the keyboard via leads provided and then there is just one mains lead - much better than the attempts to improve upon Spaghetti Junction made by other computer manufacturers!

Launched two years after the Spectrum, the CPCs retain the best features of the Spectrum, and improve upon its faults. The computer has a better implementation of BASIC, better graphics facilities and better sound than the Spectrum, and better keyboard and connections (such as printer interfaces). However, there is less software than for the Spectrum (although you are unlikely to find any top-selling games not converted to work on it) and what there is is slightly more expensive, especially on disc.

The CPC 6128 is probably the most suitable of the three main 8-bit computers for business or other serious use - partly because of its memory capacity and disc drive, partly because it has the standard 40 column screen, but mainly because of the excellent software for it - such as **Protext**, which must be the best wordprocessor on any 8-bit computer by quite a long way. **Masterfile**, a quality database package, and spreadsheets such as **SuperCalc**, which many businesses use.

A big doubt with the range is whether it will be scrapped some time next year: this should not deter you too much though, since there are so many users that software houses will continue to support it for some years yet. There are no guarantees that the same will not be true of the Spectrum or Commodore, either.

## Commodore 64/128

The Commodore 64 computer is another dinosaur from a similar era as the Spectrum. While this is bad since it means it does not exploit recent advances in technology, it also means that there is a huge international user-base, which software houses and peripherals manufacturers will support for many years to come. The 64 costs about £170, while the 128 model costs £250 including a datacard and some software, or £400 with a disc drive.

It is an almost ideal games computer - with one of the best sound chips of any micro, graphics features including built-in sprites, which aids games programmers considerably, and a large memory (although again, most games are written for the 64K memory, and do not use the full 128K of the larger model).

It is not a very good machine to choose if you want to learn to program - its on-board BASIC is none too good, and for machine code the Spectrum or Amstrad are better. The Spectrum and CPCs also have more

versions of other computer languages available for them.

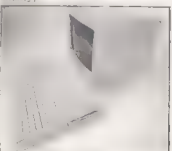


Commodore C64

## Atari ST range

Atari is really pushing its ST range this Christmas, and there are many who think it will outsell its cheaper 8-bit competitors. It has been on sale for over a year, but has only really taken off in the country over the last six months. Definitely, the ST is the "in" computer to buy this Christmas.

The entry model is the 520ST/FM (£299) which comes complete with a mouse, disc drive and lead to connect it up to a TV set in the same way as you would an 8-bit computer. (Other models include the 520 STM for which you need to buy an adaptor to connect to a TV set, and which does not include a disc drive, and various configurations of the computer with more memory.)



Atari ST

There is already a vast selection of software for it - games software for the computer is only just beginning, and yet there are already hundreds of very good games for it. The computer has an excellent selection of serious programs, as well - most use GEM, which makes them easy to use for people without much computer experience, and the faster processing power of the 16-bit microchip makes a lot more features practicable on the machine which would not be on, say, the Spectrum.

There are also programs you can buy to make your ST use IBM PC-compatible software, so that if you want to use it for business use you can use the same software as you do at work. There are several **Lotus 1-2-3** compatible spreadsheet packages written specially for the ST.

With its £299 entry price, the ST has to be the best value this Christmas - if you can get one. Different trade reports have

suggested that demand is a lot greater than supply, so don't leave it until the last minute before buying yours. There are not many discounts available for it, but WH Smith is giving away free software with the computer.

## Commodore Amiga

The Amiga is a new machine for this Christmas, and has incredible features, as the advertising campaign shows. The Amiga is more powerful, has better graphics capabilities, and sound facilities than the Atari ST. It also has a built-in IBM PC-compatible emulator, so that you can run a lot of standard business packages on it if you wish to. But its disadvantages are that it is still quite expensive, at £499 for the basic machine, the A500, and seems to be just out of reach of the majority of home



Commodore Amiga

users' pockets. Commodore is even marketing it as a business, rather than home, micro.

This has knock on effects in terms of how much software is written for it, and currently there is less around, and at higher prices, than for the ST. Undoubtedly it is the better computer, but it comes down to a choice of whether you want to pay for the extra features.

**Popular  
Computing  
Weekly's  
Christmas  
Buyer's Guide  
continues on p. 33**

# MASTERTRONIC

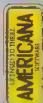
## TOP 30

Position	Title	Make	Machine Type								
			Spectrum	C64	Amstrad	C16	Atari	MSX	BBC/ Electron	Amiga	Sega
1.	Bosconian	Mastertronic	✓	✓	✓						
2.	Milk Race	Mastertronic	✓	✓	✓		✓				
3.	Angleball	M.A.D.	✓	✓	✓						
4.	Rentakill Rita	Mastertronic	✓								
5.	Venom	Mastertronic	✓	✓	✓						
6.	Agent X II	Mastertronic	✓	✓	✓						
7.	Knightlore	Ricochet	✓		✓						
8.	Spore	Bulldog	✓	✓	✓	✓					
9.	Knightshade	Ricochet	✓		✓						
10.	Kung Fu Master	Americana	✓	✓	✓						
11.	Kikstart II	Mastertronic	✓	✓	✓						
12.	Alien 8	Ricochet	✓		✓						
13.	Kromazone	M.A.D.		✓							
14.	Rapid Fire	M.A.D.	✓	✓							
15.	Rigels Revenge	Bulldog	✓	✓	✓		✓				
16.	Action Reflex	Ricochet	✓								
17.	Outrun	Sega									✓
18.	Feud	Mastertronic	✓	✓	✓	✓		✓		✓	
19.	Beach Head II	Americana	✓	✓	✓						
20.	Space Harrier	Sega									✓
21.	Xevious	Americana	✓		✓						
22.	Jet Pac	Americana	✓						✓		
23.	Star Lifter	Mastertronic		✓							
24.	Enduro Racer	Sega									✓
25.	Choplifter	Sega									✓
26.	Level 5	Mastertronic	✓								
27.	On Cue	M.A.D.		✓		✓	✓				
28.	World Grand Prix	Sega									✓
29.	Motos	M.A.D.	✓	✓	✓						
30.	Amazon Women	Mastertronic	✓	✓							

SEGA



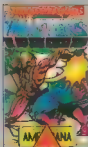
RACK'IT



RACK'IT



SEGA



NEW RELEASES NEW RELEASES NEW RELEASES NEW RELEASES NEW RELEASES

# CHRISTMAS BUYER'S GUIDE

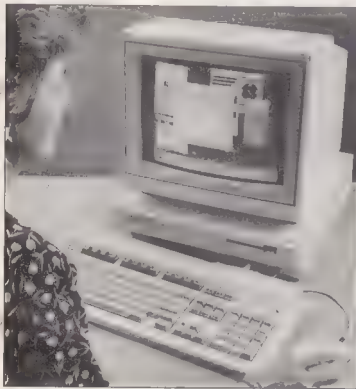
◀ continued from page 31

Other computers abound this year, too, for slightly more specialised use. Acorn is still selling its **BBC Master** range, which now looks very over-priced at £400 for the very basic model, but it might suit your needs. Its other machine is the **Archimedes**, which is almost a dream-machine, making the Atari ST and Amiga look ancient; but it is very expensive, at £800 for the basic model without monitor, and has very little software written for it as yet; for now at least, it is really only for the serious programmer.

remain very attractively priced. There is very little entertainment software for the PCWs, but you can get other database, spreadsheet and accounts packages for them if you wish.

The other micro Amstrad is aiming at the home user is its junior PC-compatible, the **PC 1512**. It received mixed reception when launched, and had a price cut last Autumn when Amstrad launched its more up-market PC range, the **PC1640** - whereupon Amstrad announced that the 1512 would now be targeted at the home user. At £499 +VAT, it is still quite expensive,

a portable computer roughly the size and weight of a pad of A4 paper, and yet it has built-in packages including a spreadsheet, wordprocessor and database. It has a good keyboard, reasonable display, and has been reviewed favourably in the press. If it's what you want, it is good value at £257.50.



Acorn Archimedes

Amstrad is also selling a variety of more serious computers. It has added the **PCW 9512** to its range of word-processor micros - which includes monitor, disc drive, daisy wheel printer (for high quality print-out), keyboard and word-processing software; at just £499 + VAT, this represents very good value if you want a good, if simple, word-processor.

It is still selling off the two older versions, the **PCWs 8256** and **8512**, at £299 and £399 + VAT respectively. These have the older version of the word-processor software, a slightly less good monitor, and only a dot matrix printer (less good quality print), but nonetheless

and is unlikely to sell in vast quantities. It, too, is very good if you want a simple micro to run PC-compatible programs which you can bring home from the office and work on in your own time. Several software houses are also trying to step up the number of games for it, with some very good games on sale already, which implies that they have faith in its appeal to at least some home users.

Sir Clive Sinclair has also launched a new computer through Cambridge Computer. The **Z88** is aimed at "business executives on the move" primarily, although there has been a lot of interest in it from other sources such as journalists. It is



Z88

The other main thrust of hardware manufacturers this year is on **games consoles**. These are dedicated games computers, which you cannot use for serious use even if you want to. There were a few around about four years ago, but these didn't take off, since most people found them too restrictive. Still, if you are sure you want to use a computer only to play games on, then they represent a good bet, as they undoubtedly offer some good games features; but they are unlikely to have as much software as the main-stream computers, and what there is will probably cost more than the equivalent computer game. There are three main consoles on sale: the **Sega**, **Atari**, and **Nintendo**, with prices from around £100.

Now turn over  
for our 1987  
Christmas Buyer's  
Guide to the  
year's software  
releases

# CHRISTMAS BUYER'S GUIDE

**David Lester  
continues his  
Christmas Guide  
with a rundown  
of 1987's software  
releases**

Software is far more subjective than hardware, which makes compiling a guide of recommended titles rather difficult. But there are certain titles which stand out in various ways, or which are generally acknowledged to be "something special". So unless the person for whom you are buying already has one of these, the following games ought to be the ones which bring a smile to their face on Christmas morning.

**Firebird** has finally introduced the first version of the long overdue *Star Trek* game, on Atari ST: it is already riding high in the charts and has some superb graphics and sampled speech which make it essential for any *Trek* fans. Its other major release is the coin-op conversion of *Flying Shark*, which is out now on Spectrum and Commodore, and promises to be highly playable.

Sister firm **Rainbird** has released *Jinxster*, the new epic from Magnetic Scrolls whose stunning graphics have already won the pockets of many - a game for the slightly older player. *Universal Military Simulator* is also out and looks like being by far the best thing to happen to computer wargames for some time; it provides a choice of five initial scenarios, and gives accurate graphic maps of terrain, including contours; you can mix 'n' match with different times, too, which adds to its zany factor. This is likely to win many more fans for war games than any other release recently. Watch out, too, for *Carrier Command* - due for release very soon after Christmas on ST, which should be one of the first programs to exploit the capabilities of the computer.

**Domark** is also vying for a large slice of the Christmas market, and some of its products look set to get it. The main title is *Star Wars* - a very accurate conversion of the old arcade game, casting you as Luke Skywalker, piloting an X-Wing fighter on behalf of the rebels. There are several stages, from dog-fighting with the Tie fighters of Darth Vader's forces to shooting up missile silos and towers on the surface of the Death Star, to skimming through the

trench towards the exhaust duct which you must shoot to destroy the Death Star (except that in this game, they keep on bringing in new Death Stars every time you destroy one, which doesn't seem quite fair, somehow!). They are also plugging the Jeffrey Archer licensed *Not a Penny More, Not a Penny Less* and a series of TV quiz games. Of course, its perennial *Trivial Pursuit* is bound to sell in vast quantities this year, as last: the new ST version is especially good.



**Virgin** is releasing the computer version of *Scripties*, too, so if you're a fan of board games, this might be one to consider. The problem with it, though, as with the real thing, is that the questions all become quite similar after a while, and begin to lose the humour on which the game depends.

**Prism Leisure** is also releasing a board game conversion - of *EYE*. And again it's a good conversion, if you like this kind of puzzle-ish game.

This year, **Incentive** has put itself well and truly on the map with *Driller*. This uses *Freescape*, a new 3D graphic technique, which has got a lot of people pretty excited. The game itself is not a quick

moving blast 'em up, but is enthralling nonetheless. Not the number one, but a close contender (Spectrum, C64 and CPC).

**Digital Integration** is putting its bid in for chart success this Christmas with an appropriately icy number - *Bobsleigh*, for Spectrum, CPC and C64. The Spectrum version especially is something else, giving you the impression that you could almost be there. Something slightly different which is well worth a second look.

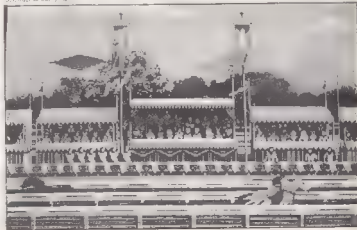
In a similar vein is **Tynesoft's** major release, *Winter Olympiad '88*, available for almost every computer; this is a skiing simulation, involving slalom, downhill, biathlon, jumping and bob-sleigh events. The game is above all else great fun, and is one of the few computer games well-suited to several players. A great game, even for just armchair sports-people.

**Mirrorsoft** finally has released *Defender of the Crown* for the ST and Commodore 64. While the game play is slightly weak there will be a lot of people who cannot resist the excellent graphics. All in all, the game is very atmospheric and some fun, and is a classic which most people would want in their collection, but it won't keep you at it all night.

**Hewson** has released its latest biggie, *Nebulus*, on Spectrum and C64 - and this could well hit number one spot this year. The game is set beneath the waves, and is an arcade adventure par excellence - its main difference from others being the delightful graphics, and its sheer addictiveness. As they might have said "no-one ever got sacked for buying a Hewson game."

**Elite's** big hit this year is *Buggy Boy*, the arcade coin-op conversion, which will be battling it out against US Gold's *OutRun* (which many believe to be the best game on sale this Christmas). They are

continued on page 39 ▶







You're cool, the engine's hot, the girl's gorgeous,  
a tank full of gas and an open road.... the rest is up to you!!

# Out Run<sup>TM</sup>

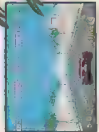
Screenshots from Amstrad version.



Screenshots from CBM 64/128 version.



Screenshots from Spectrum version.



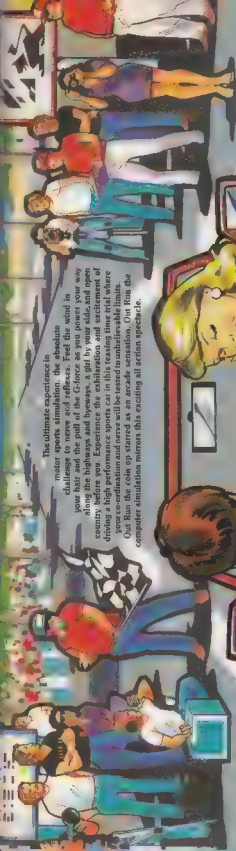
Screenshots from Atari ST version.

## START



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The machine becomes a home computer reality on December 10th.

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SEGA

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## GAMES

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Adventure Const. Set	£29.95	£21.50
Art Paris I	£9.95	£7.50
Art Paris II	£9.95	£7.50
Arctic Fox	£29.95	£21.50
Arakos Tomb	£29.75	£20.50
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Archon 2	£29.95	£21.50
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TITLE	RRP	OUR PRICE
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Hardball		
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Pawn	£24.95	£18.50
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Roadwar 2000	£24.99	£18.50
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TITLE	RRP	OUR PRICE
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Sorcerer	£29.99	£21.50
Stadonfall	£29.99	£21.50
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Continued from page 34



both car racing games with extras thrown in such as flying through the air when you hit a log, or other hazards. Ever popular, this type of game is also extremely addictive, and will be high on most gamers' lists of priorities.

There is a few other brief recommendations. *Trantor* (US Gold) - extremely highly thought of on the PC micros and

could be worth a second look, as could *Martech's* new *Grand Prix* game (unreleased at time of writing). *Backlash* will be one of the best-selling ST games this Christmas - its simple theme allows use of some extraordinarily good graphics, and the game is irrepressively addictive. *Elite*, the ever popular space trading and combat game, has been given a new lease of life via a conversion for IBM compatibles and it's probably the best version yet. And think seriously about *Arkanoid* or *Impact* - to my mind the most addictive games to have been released this year.

Then, of course, there are the compilations. These offer superb value for money, so long as you haven't got half of the titles on each package. This year there seem to be more than ever before, although as yet the ST, Amiga and PC market seems to be suffering from a decided dearth of them. On the CPC, Spectrum and C48, try any of these: *Game, Set and Match* (Ocean) - any sport you could conceive of, on a computer; *Live Ammo* (Ocean) - seven of the better combat games from the last year; *Solid Gold* (US Gold) - five excellent games, including the ultimate in golf games, *Leaderboard*, and last year's mega hit, *Gunfire*; *6-Pack 2* (Elite) - five top ten hits from the last year, plus a free game; *The Elite Collection* (Elite) - their best hits, including *Paperboy*; *10 Computer*



*Hits 4* (Beau Jolly) and *5 Star Hits 3* (Beau Jolly) - two compilations packed with some hot titles. Also watch out for a compilation from *Hewson*, due out just after Christmas, with four of its best arcade games, such as *Uridium*, *Exolon*, etc.

This is by no means an exhaustive guide - and cannot be such. However, most of the best programs on sale this Christmas have been mentioned. All you have to do now is decide which to go for. □

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# Serious typing

David Lester weighs up the pros and cons of two ST packages.

**W**ord processing is probably the most popular non-games use for computers in the home. As such, it is no surprise to find that there are a few packages for the ST providing the new user with the problem of which to choose.

In many ways, the ST is ideal for word processing, with a large memory capacity, GEM for ease of use and a 16-bit processor. It is just as powerful as most IBM-compatible PCs - it can even be made to run PC software if you wish - hence the likes of *WordStar* could be used and so the software should exploit that. The only disadvantage is really the keyboard, which is far from excellent for serious typing.

The story takes a slightly different twist now, though, since the historic word processor is no longer as simple as it used to be. Unless you have been on Mars you can scarcely fail to have heard of the desk-top publishing revolution.

DTP takes the concept of word processing several steps further; not only can a DTP package process words but it will also allow you to have several columns of text on a page and to use a variety of extras, such as different fonts, lines to make the text more attractive, and graphics.

This may sound like much more than a simple word processor - and it is. If you are wondering why most people need such extra power, join the club and congratulate yourselves - you have just seen the reason an intermediate stage has arisen, the so-called document processor.

A document processor is like a standard word processor but has some extra features added, although nothing like as many as a DTP package would provide. The document processor may support fancy fonts or let you import simple graphics which you have designed using external software. The key, though, is that the primary aim of a document processor remains the same as that of a word processor, to make the production of documents, be they letters or essays or reports or articles, easier and more efficient.

The latest word processor for the ST, *Calligrapher* by Computer Concepts (£60) is such a beast, allowing you to use simple graphics and different fonts in your text. Its manual makes it very clear that its roots are very firmly based on the word processor of old.

## What you see . . .

We look at how the package lives up to the impressive claims made for it and how it compares to a popular word processor, *First Word Plus*, by GST Software (£78.95).

Both have WYSIWYG word processors. This means that, if you make use of underlining, bold, italic, sub- or super-scripts rather than a space or control code appearing on the screen - as happens with non-WYSIWYG programs - you see the relevant effect on the screen, making it far

easier to visualise the final appearance of your document.

The first thing you will notice about *Calligrapher* is its size and complexity, which is inevitable with a package such as this. It contains four discs, labelled 1 to 4, and there is a fairly lengthy initialisation process you need to go through before you can start up and get writing.

It was pleasing to note that all packages reviewed here encouraged the making of back-up copies, and your master discs safe; all too often the threat of piracy prevents such back-up facilities being provided, which is irksome when your discs become corrupted.

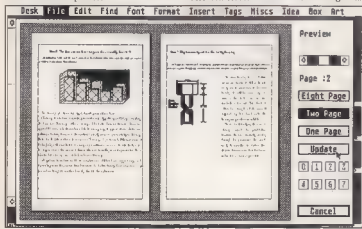
As with most word processors, the ruler defines the format of your text/document. Here it plays a more important and detailed part than usual, with the ruler showing inches for centimetres on the screen. The disadvantage is that in graphics mode the ruler is limited to a length of just 6 1/2, because of the current release of *GDOS*, a part of GEM which the program uses but which is not included in the ST operating system.

You use the ruler to set up the number of columns you require, but incorporating the appropriate number of left and right margin signs in the ruler. You can have rulers anywhere you like and thus can have a variety of formats on the same page if you so wish. The best thing about this is that when you make changes the text is re-formatted automatically for you, once the ST detects a pause in your typing.

The formatting does not end with just one column either; if you have a page with, say, two columns in it, and add a line to the first, the program moves text automatically into the second column as necessary. As you might expect, you can copy rulers from one part of your text to another, thus obviating the need to type in the same ruler again.

## Global information

Most of the global information you need to set up the format for each document, except for font details, is contained in the ruler, including any justification, tabs or indents, or whether text should be centred or flush to either the left or right margin. All those options are represented by mini-icons on the ruler and are turned on or off



Calligrapher.



by dragging each symbol on-to or off the ruler, as appropriate. This system works well.

**Calligrapher** is well-endowed in terms of text processing features. It has the usual cut and paste and search and replace commands. There is also a substitute facility, whereby you can insert one of four variables in the text. Having previously set up the variables to be a phrase of up to 31 characters, the phrase then appears in the text. A good feature, though, is that should you alter the variable, subsequently, the phrase already in your document will change to the new one, which makes it very useful for personalising letters.

## Family tree

The package is supplied with two fonts, and you can use others if you wish and have the memory capacity; 520 ST owners will probably be able to have only two fonts in memory at once.

The spelling checker uses a 60,000-word dictionary. Its most pleasant feature is that it works in real-time, checking words as they are typed-in - or at least I believe that to be the case. It works only for STs with more than 128K free as the dictionary clearly needs to reside in memory. For 520 ST owners, things are not so easy, you must save your document and then activate a lengthy process whereby the computer accesses both the document and the dictionary from disc, which is scarcely ideal.

One last novel feature of note is an "Idea Outliner" which helps you plan your document before you write it. It uses boxes, to which you assign labels to represent different sections of your document, structured along the same kind of lines as a family tree.

## Several "children"

The first box represents the whole document, then several "children" emerge from the "chapters" of your document. Each chapter then splits into sections and, if necessary, sub-sections. You may then edit your plan, moving whole branches at a time if necessary, and all relationships within that branch will be kept. This is very impressive and extremely useful for all manner of documents.

Of course, there are graphics features, too, enabling you to incorporate any pictures in either .GEM or .IMG format into your text. If you have *Degas*, *Neochrome* or *Easy Draw*, one of the discs contains a utility to convert pictures created with them into appropriate files.

**First Word Plus** is similar, if less sophisticated than **Calligrapher**. It could perhaps be graded as one step nearer to a word rather than document processor than **Calligrapher**. It maintains a similar for-

mat ■ the **First Word** predecessor which many ST owners received free with their machines and hence familiarity may play a big part in its undoubted success.

It has most of the standard features found in good word processors, such as search and replace, cut and paste and a host of extras, too.

For me the best feature is that the program allows you to have several text windows open at once, allowing different documents to be worked on at the same time. If you are writing related documents, this is very valuable; otherwise it might prove helpful just to make a change ■ have a business letter on one, with a letter to a friend as light relief on a second.

Footnotes and bookmarks are two of its more useful features. Footnotes are those things you see flagged in the middle of paragraphs of books or articles, referring you to a note at the bottom of the page or end of chapter for further information. To include a footnote, click on the relevant command in the Layout menu; the program then inserts the superscript number of the note and opens a special window for you to enter the relevant text. This text can be edited, formatted, and its spelling checked as with normal text. Bookmarks are special markers which you can place at some point ■ particular interest to you in the text.

## Hard-wearing

If it is a long document, or one which involves some cross-referencing, the markers can be useful as they allow you to move straight to the marked point in the text, at the press of one button - or at least two mouse-clicks. This means you can nip back and forth between a number of points in the text without wasting time finding the place you wish to reach. It is a pity you cannot have more than four of them at once, but that is four better than **Calligrapher**.

The spelling checker works almost identically to that in **Calligrapher**, except that its dictionary is 40,000 words as opposed to the 60,000 of **Calligrapher**. Both can be supplemented by user-defined supplementary dictionaries and both can be used in real-time if wished, or at the end of a complete document. The **First Word Plus**



First Word Plus

spelling checker's browsing feature is useful; when you have mis-spelt a word, if requested the computer will suggest a few possible corrections. That much is standard. What this also offers is the facility to browse through the alphabetical list of words, which might be of more help.

As with **Calligrapher**, **First Word Plus** has limited graphics capabilities, so that your pages may include pictures or diagrams as well as text, although **Calligrapher** is undoubtedly stronger ■ its graphics capabilities.

Documentation is crucial for the packages, as you need to learn a good deal before being able to use them. **Calligrapher** is by far the most difficult mainly because it offers the most facilities.

**First Word Plus** does not offer an index. **Calligrapher** has a very helpful quick reference chart, providing a summary of the commands, specially bound in a plastic substance to make it harder-wearing.

All the packages make excellent use of GEM, with good icons and pull-down menus, but none offer a word-count, which as a writer with strict word limits to observe I find unforgivable. I still find manipulating simple text far more efficient on **ProText** for my CPC than on any of these packages.

For strict text-only use, **First Word Plus** or **Word Writer** is for you. **Calligrapher** will only get in the way of efficiency by offering unnecessary extras. If you want the facility to use graphics, diagrams, or multi-column text, **Calligrapher** is an incredibly powerful tool, worth the effort to master and at a reasonable price. □

### Multiple columns

The format of **Calligrapher** text is controlled by rulers. These not only affect such things as the margin settings, but can also control the line spacing, justification and most vitally the number of columns.

This page for example contains of one column for the main text, followed by a ruler that sets two columns below this. The column on the right contains a graphic image imported from disc.

New Bearing Design

Calligrapher

# I'm dreaming . . .

. . . of an integrated spreadsheet/wordprocessor for the Z88. Barry Smith reports.

In the rather grandiose terminology of the PC world, *PipeDream* would count as an integrated package. Many Z88 owners will see it largely as a simple word processor. Fundamentally, though, *PipeDream* is a spreadsheet program.

Like most spreadsheets, *PipeDream* has a workspace consisting of a matrix of cells, called *slots* arranged in columns identified by letters and rows identified by numbers. In theory, the *PipeDream* matrix consists of 43 columns - A to Z and AA to AP - and 32,768 rows. In practice, of course, you would exhaust the memory of an unexpanded 32KB Z88 long before you filled the whole workspace.

A rectangular block of *PipeDream* slots one or more columns wide and one or more rows deep is called a *range*. Ranges are important in many *PipeDream* operations and are identified by giving the address of the top left corner followed by the address of the bottom right. Thus the range consisting of the first three slots in the top row of the spreadsheet would be A1 C1.

*PipeDream* will allow you to put either text, numbers or formulae in any given slot. Formulae - the *PipeDream* term is *expressions* - return results which *Pipe-*

arithmetical operations, and you can use any of the *PipeDream* built-in functions. *PipeDream* functions range from the SUM() function, through trigonometrical and logarithmic functions, to functions for handling and displaying dates.

*PipeDream* has the unusual feature that several functions can take a *list* of arguments. The SUM() functions of many spreadsheets allow you to specify a range and will then return the sum of the values found in each slot in the range. The *PipeDream* SUM() function allows you to list several items, which may include ranges, individual slot addresses and numerical values. Thus, the expression:

SUM(10.5, A1 D6, E15 E16, F6, G9)

will total all the values in the rectangular block of four columns and six rows in the top left corner of the worksheet, add the values in a 30-slot section of column E beginning at E15, add the values in F6 and G9, and finally add 10.5 to the result.

To enter text, numbers or formulae into a given slot you have to move there. It is not sufficient to move forward to a column by hitting the right arrow repeatedly; if you do that you will remain in column A even when you are apparently under column F. Check the current cell readout by the menu on the left-hand side of the screen if you doubt this.

To move forward column by column you use the tab key. To move back by columns you can use shift-tab or, if you are at the left margin of the column, you can hit the left arrow key. Other cursor movement options, including First Column, Last Column, Top of Column and Bottom of Column are available in the Cursor menu.

To enter text in the current slot, where the cursor is located, you start typing and if the text you type exceeds the width of the column it displays over adjacent columns provided those columns are otherwise empty. Text normally is stored in the first column but displayed over several columns. When the text reaches the right margin, which is set by default to the right-hand side of the screen, the *PipeDream* word wrap feature comes into play: the cursor moves to the left-hand margin of the next row. From then text is stored in the first slot of the next row.

That is very close to the way that word

processors work. The illusion is almost complete but a few oddities gives the game away. To split a line in the middle, you cannot insert a carriage return as you would with most word processors; you have to enter the <>Edit Split Line command.

## Monday's mileage

To reverse the operation, you cannot delete the carriage return. You must enter <>Edit Join Lines instead. Hit the left cursor arrow when you are at the left margin and you will not find yourself at the end of the previous line as you might with a conventional word processor.

Still, *PipeDream* editing facilities are fairly comprehensive and make the program ideal for the preparation of printed documents incorporating running text, tables of information and calculations. Applications might include the preparation of invoices or weekly expense schedules.

To see how *PipeDream* might be used for an application of this kind, try creating a very simple expenses schedule. Enter headings or running text using the *PipeDream*'s text editing facilities but use *PipeDream* expressions to calculate travel expenses, multiplying mileage automatically by the allowance per mile, and to sum the cost of travel, accommodation and food.

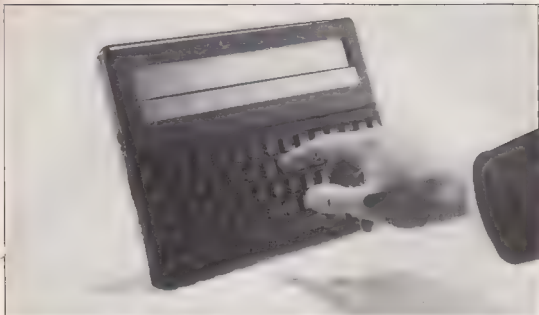
Having laid out the fixed part of the expense claim on the top three or four rows, perhaps using Layout Align Centre (<>LAC) to centre headings, you could title columns B to F of the fifth row with

**"In the rather grandiose terminology of the PC world, *PipeDream* would count as an integrated package. Many Z88 owners will see it largely as a simple word processor. Fundamentally, though, *PipeDream* is a spreadsheet program."**



*Dream* displays in place of the formulae. Text or numbers are shown literally. You can format either the whole worksheet, ranges or individual slots to display values right- or left-justified. You can also control the format in which numbers will be displayed and the width of each column. Options are available to display numbers automatically with leading £ signs or trailing % signs as appropriate.

To form expressions, you can make use of a range of mathematical operators, including +, -, / and \* for the four basic



the labels Mon, Tue, Wed, Thur, Fri, hitting the tab key after typing each label. Then enter your expense headings for a travelling salesman they could mileage, travel cost, accommodation, food and of course the daily and weekly total.

Place one heading on each row in column A. Type text in the normal way, making sure that the headings fit in the available column width, and hit the return key after typing each label to start a new row. If necessary you can adjust column width by using the <>W command.

Then position the cursor on slot B6 ready to enter Monday's mileage. If you merely typed the mileage, PipeDream would treat the figure as text. Since generally we want numbers right-justified with decimal points aligned, we enter the number as an expression. To do this, type <>X followed by the number and then hit return to enter it into the slot. Immediately, the number displays right-justified.

Tab across and enter figures for Tuesday to Friday. Notice that each number is displayed according to the PipeDream default, with two decimal places and no currency sign, and note also that the column headings do not align with the figures, since the PipeDream default text format is left-justified within each slot.

Next, re-format the column headings so they are right-justified and therefore align with the figures to which they refer. The method is to select first the range of slots to be re-formatted. Move to slot B5 and type the Mark command <>Z. Tab across to F5 and type <>Z again. Then, with all

the column headings highlighted, enter the Layout Align Right command (<>LAR), type <>Q to clear the marks and see the result.

Suppose that mileage claims are always submitted to the nearest mile. Two decimal places is satisfactory for entering monetary amounts but for mileages it makes sense to specify the integer format - in other words, no decimal places. Mark the slots in the row from B6 to F6 as previously and then enter the Layout Decimal Places command (<>LDP), followed by 0 in the Number of decimal places field. Hit return and the mileages should be displayed as integers.

### Typing the asterisk

Clearly the travel cost figures can be calculated from the mileages providing there is a standard allowance and any spreadsheet worth its salt should be able to calculate them for you. The method is to enter an expression in slot B7 which contains a reference to the mileage above in B6. If the mileage allowance were 20 pence then the correct expression to calculate the travel cost in pounds would be B6\*0.2 or the mileage multiplied by 0.2. Remember that you must include the multiplication sign and that on the Z-88, as on most other computers, you indicate multiplication by typing the asterisk, not the 'x'.

Now you have the formula entered for the Monday column, use the PipeDream replicate command to reproduce the for-

mula for the other four days. Type <>BRE and a window opens prompting you for the range from which to copy and the range to which to copy. Enter B7 as the source range and C7:F7 as the destination, then press return. You should find that C7 contains the formula C6\*0.2, D7 contains the formula D6\*0.2, and so on, with the result that the travel costs for each day are displayed correctly.

### Cursor in cell B10

Enter values for accommodation and food costs in rows 8 and 9. Position the cursor in cell B10 ready to enter a totalling formula. The values to be totalled are in rows 7 to 9 and the formula for B10 is therefore:

SUM(B7:B9)

Replicate this formula from B10 across to F10 and the daily totals will appear automatically. The final action is to block mark all the monetary values using <>Z and enter the Layout Character Leading command (<>LCL); the values will then be prefixed by the pound sign.

Once the expenses schedule has been constructed it can be used as a template for a weekly expenses claim.

A simple table of this kind could be included as part of a bigger document. PipeDream makes it easy to alternate between spreadsheet tables of this kind and running text, so that a template for a full sales report could easily be built covering sales, commission, expenses and comments on the places visited. □

# Information station

Barry Smith gets to grips with InfoMaster.

When the Amstrad PC was launched, Amstrad also launched a range of repackaged applications for the machine. *WordStar 1512* is still going strong as *WordStar Express*, *SuperCalc* has just been upgraded to version 3.21, but the excellent Borland *Reflex* database has been replaced by a new package, *InfoMaster*.

*InfoMaster* is, in fact a version of the Sapphire International *DataMaster*, a long-established relational database manager which has evolved into the company's current flagship package, *DataEase*. *InfoMaster* will run on an Amstrad PC, IBM PC or compatible with a minimum of 256kb of RAM. It can be used on twin floppy systems but any serious database application is likely to be restricted sooner or later by a shortage of disc space on a floppy-only system; ideally, you would want to run the program on a hard disc machine.

## Easy upgrade

At \$69, compared to the \$545 price of *DataEase*, *InfoMaster* is a bargain. There is an easy upgrade path to *DataEase* if you should outgrow the package and data files can be converted easily to *DataEase* for-

mat. The upgrade price is \$375; at this rate it is cheaper to buy *InfoMaster* and *DataEase* than it is to buy *DataEase* alone.

Compared to *Reflex*, which has many of the analytical features of a spreadsheet package and which allows you to flip between tabular, form, graphical, cross-tabulation, report, or even split table-form views of your data, *InfoMaster* at first seems limited. It is tied resolutely to the screen-form view; other views have to be set up manually as pre-defined reports.

*InfoMaster* is largely menu-driven but it lacks the up-to-date pull-down menus of *Reflex*, making use instead of more traditional '0 to 9' full-screen menus.

## Extra functionality

Those apparent disadvantages are minimal, however, compared to the extra functionality *InfoMaster* offers. Unlike *Reflex*, which can handle storing and analysing information from one flat data table at a time, *InfoMaster* is geared to more complex tasks. You can set up complete applications based on any number of related data tables, complete with custom menus and separate data entry, reporting query, and system maintenance

routines. Like *InfoMaster*, your applications can be completely menu-driven. *InfoMaster* menus can be included in your application as menu options or excluded from it.

## Sterling money

A database in *InfoMaster* terminology can consist of many user-defined forms - *InfoMaster* forms are the equivalent of single data tables in other database programs. Each form has a fixed field structure defining the structure of the information which will be held in the form.

The most fundamental task in creating an *InfoMaster* application is defining the forms. *InfoMaster* supports a large number of data types, together with range-checking, look-up tables, calculated fields and default values; those features are designed to speed data entry and ensure the accuracy of the information as it is entered.

As you define each field in *InfoMaster* you also position it on a screen form. You are not restricted to the number of fields you can fit on a single screen - it is possible to build multi-page forms.

Text fields can be defined up to a maximum length of 255 characters. Num-

InfoMaster

**PRINT STYLE**

**PRINT STYLE SPECIFICATION**

Report Destination: Printer Allow Style modification at run-time: no  
 If disk Output: Filename  
 Now press: DEFAULT VIEW to get default values for the remaining fields  
 Printer Name: Epson MX-80  
 Pause after each page: no

**IF PRINTER NAME IS SPECIFIED ABOVE**

**PAGE SIZE AND POSITION ON CARRIAGE (in inches)**  
 Length: 11.00 Width: 13.00 Starting position

**MARGINS (in inches): SEE FIGURE ON LEFT**

1. Left	2. Right
3. Top to Header	4. Header to Text
5. Footer to Bottom	6. Text to Footer

**TYPE STYLE**

Characters Per Inch: 16.00 Lines Per Inch: 6.000  
 Highlights: 2 3

**FIGURE F2ENTER F3DEFAULT VIEW F4END F5FORM CLEAR F6FIELD CLR**

ber fields are available, storing values with up to 14 digits numeric precision. You can format number fields as integers, fixed decimal or floating point numbers. A sterling money field type is really just a special case of the fixed decimal numeric field.

## Telephone numbers

To cater for telephone numbers, account numbers and so on, a numeric string data type is provided; number string fields prevent the entry of alphabetic characters but they will produce an error if you use them as the basis for a numerical calculation. Time and date fields are available and *InfoMaster* supports the British day/month/year date format.

More unusual is the Choice field type. It allows you to restrict entries in a field to one of a set of pre-defined choices - up to 15. A Yes/No field type is provided but again this is just a special type of choice field. Choice fields could be used, for example, to compel the user to enter either M or F in a personnel record to indicate the sex of each employee.

Apart from choosing field types a range of other options is open to you. Fields can be indexed, this allows rapid look-ups using indexed fields as keys. You can define a field as required - in this case it will be impossible to create a record without filling in a value for each required field.

## Pre-defined choice

Either one field or a group of fields can be designated as exceptional; if an operator then tries to add a record with matching data in those fields, an error message will be generated warning that the record already exists. Range checking allows upper and lower bounds to be set to entries; it could be a useful way of ensuring that unreasonably low or high values are not entered.

Default values can be assigned to fields. One common default is to put the computer system data automatically in a date field to indicate when a record was created. Defaults can, if necessary, be derived by calculation, look-ups in another file or automatic sequencing. The last option would be useful to allow system-generated account numbers to be allocated.

Look-ups, a feature of many relational databases, provide a more flexible approach to data entry validation than the choice field system. *InfoMaster* lookups forms are like any other data table and can contain any number of entries, whereas the check table associated with a choice field is limited to 15 items. The penalty is that you have to spend more time setting

up the look-up and it will take up more disc space.

Where default values have been defined you can either prevent or allow the operator to amend the default or calculated value. If the prevent data entry option is selected for all the fields on a page, the page will never be displayed; this provides a way to hide system fields from operators.

Once you have defined a form, it is possible to use the *InfoMaster* menus directly to add records and maintain the database. You can also query the database or define permanent reports - but to develop a complete custom application, the next step is to define menus.

You can replace the *InfoMaster* menu with your own menu system. Each menu can contain up to nine user options, 1 to 9. Option 0 is always the exit option, it backs up to the previous menu or from the master menu to the system. Menu choices can be of several types, any given option can call the *InfoMaster* main menu, the Utilities menu, or any other user menu; it can call a form for data entry or update, it can allow a one-time query to be formulated or run a pre-defined report, it can report the status of the database, back it up, or restore from a back-up, it can import data from an external source, or finally it can allow the operator to run another DOS program.

The menus can be as elaborate as you like. The practical limit is around 40 separate menus. Password protection is implemented both for the database as a whole and down to menu level via a security level system. You can assign several users different passwords and give each user a default start-up menu. Three security levels are available to control access to different parts of the application.

The multiple user and password facilities in *InfoMaster* are exemplary, although *InfoMaster* is not a true multi-user package - only one user can work on the database at a time. If you decided to implement your application across a network, you have to upgrade to *DataBase*.

## Basic salary

Once you have set up the forms and menus for your application you can define one-way relationships between the different forms. If you intend to use the look-up facility on some of your forms, you have to define the relationships by specifying which forms are linked and which fields are to be used for matching records. Even if you do not intend to use the look-up facility, relationships can be invaluable when querying the database or producing reports.

A personnel application might contain a form for recording departments, depart-

ment heads and location, with an exceptional code for each location. A job form might hold details of each position in a company with the associated basic salary. Finally, an employee form would hold individual details about each employee.

## Mail-merge files

With this structure, it would not be necessary to record the name of the department head, the location, position and salary corresponding to each employee. By including a department code and job code on the employee form you would allow the system to use the two codes as keys to look up the missing information on the job and department forms.

By doing this, you would make maintaining the database easier. If the salary scale changes you are faced only with amending the rate for each position, perhaps 10 to 30 records, rather than amending every employee record. You would save disc space as well as effort.

When setting-up queries and designing reports, the *InfoMaster* Query Language allows you to make use of the relationships you have defined to produce complex reports. The reporting facilities allow calculations, totals, sorting, headers and footers. Labels and form letters can be produced.

Reports can be sent to the printer or to disc; the latter is useful since it allows you to create disc files in formats which can be used by other programs, such as word processor mail-merge files.

## Industry standard

Apart from special reports and queries, it is possible to interrogate the database directly by paging through the records held on a form. You can specify one or more indices to sequence the records and you can make a selection by filling-in match criteria on an empty form. Match values can be literal or they can use the wildcards \* and ?. The \* character matches any sequence of characters at the beginning or end of a field and the ? character matches any single character at a given position.

*InfoMaster* is a powerful database manager and applications development system. It is very reasonably priced and comparatively easy to use. The industry standard *dBase* family offers slightly more flexibility but requires programming expertise. With *InfoMaster* you will eventually want to learn the query language but you can achieve far more without programming than you could under *dBase*.

The most obvious competitor is the CompoSoft *Delta* which is also largely menu-driven but is not a true relational system and lacks the power of *InfoMaster*. □



## Tuned in

John Harman, of Basingstoke Hampshire, writes:

**Q** The following information may be of help to J Bentham - issue of November, 19-19. An RGB TV tuner/composite video-to-RGB converter can be bought from Display Electronics - 01-679 4414 - for \$72.50 plus \$4.55 for the cable. I was told that the NEC Multisync, as mentioned by Mr Bentham, would not work with the above machine because it does not have RGB linear but I am not sure this is correct because the NEC has RGB analogue, which I think is the same.

I shall buy the Amiga RGB-to-composite video modulator - \$22 from Microware 0754 610217 - when I buy an Amiga but I do not know whether it works with the CPC464 and C1701 monitors.

**A** As far as I know, the Amiga should work with the Amstrad colour monitor and with a converter for composite will work with the 1701. The only problem with the latter is that the colour and picture signals are on separate sockets and a normal composite signal is on one. The trick is to connect both the inputs to the single composite signal.

## Multi-lingual

Mark Brockwell, of North Bransford, Hull, writes:

**Q** I am new to the computer world and I am thinking of getting a computer but I do not know which type is best for my needs. I need a computer with a wide range of languages, i.e. C, Cobol, Pascal, Fortran, and so on. I would also like to use it for business applications such as a database, wordprocessor and spreadsheet, etc. The price range I would consider is the \$500 to \$750 bracket if possible, or possibly even cheaper.

**A** For the applications you require either a CP/M or P/Comp would be the best, with the latter being preferable. The Amstrad PC-1612 twin disc model can be obtained for about \$470 and should be ideal. It is always better to get twin disc drives if possible, as this prevents a great deal of trouble from swapping discs in the long run.

The problem you will have is obtaining the languages at a reasonable price. Most packages start at around \$100 and rise to \$500 each. Wordprocessors, databases and so on are no cheaper, so this will probably be your greatest expense.

less should work. There is a bug in part of the ST printer driver software which requires the CTS line to be waggled for each byte sent when using the full handshaking. The fix for this is in *Peek & Poke*, Vol. 6, No. 44.

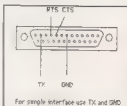


Figure 1 Simple ST RS232 - printer interface

## Off key

Keith Shappard, of Rotherham, writes:

**Q** After reading your letter page, *Peek and Poke*, dated Nov 6th-11th, I noticed D A John Wase of Bishopcleepton wrote a letter saying that he had keyboard problems with his Spectrum +2 computer. The problem of Caps shift N+M and symbol shift A not working from cold is a very common fault in the +2. It is overcome by placing a capacitor with the value of 100pF across D.35.

**A** For those of you who are not sure (including me), D35 appears to be Diode 35 on the circuit board - root around and you will find it eventually as all the components are pretty clearly labelled.

## Brotherly link

C R Felstead, of Knutsford, Cheshire, writes:

**Q** I have just upgraded to Atari 520STFM from Commodore 64 and I have a Brother M-1009 printer. Could you tell me if it is compatible with the ST?

**A** I am not sure whether the M-1009 is Centronics or RS232, but it should be compatible in either case, since the ST has both interfaces. The Centronics connection is fairly straightforward and requires the correct cable, available from most good ST dealers. If it is RS232 you will need a cable and possibly a patch for the ST printer software. If the cable is made up with the TX and ground connections only - see Figure one - running the printer at 300 baud or

## On the blink

Gerry Lancaster, of Christchurch, Dorset, writes:

**Q** There is an intermittent fault with my computer. It is all right for a while (anything up to an hour) then the power light switches off and the screen goes light blue (I've got a black and white TV but I think it's light blue). Is there something I can do to repair the computer? Is the fault with the computer or the power supply? Since it is an intermittent fault, will a repair company repair it?

Also, knowing which circuit the power light is connected to, is it only the power supply that can turn it off? And if I need a repair company, could you recommend one?

**A** One of the occasional problems that occurs when answering letters is that querists fail to state which machine they have, as in this case. Normally I would file such letters under B but in this case I would guess that you have a C64. If this is correct then the most probable fault is with the external power supply, especially if it is of the old green (grey?) boot type. What you probably need is a replacement which can be supplied by any repair firm dealing in the C64.

A number of companies advertise in the back of *Popular* so pick one that is close to home and phone them. If you can get one that takes credit cards then you can be reasonably sure that they are going to be reliable since you will not have to pay them if they do not fix it. Enquire how long it will take to cure the fault and

make sure they understand that there is a fault. This should make sure that they will give it a good soak test (leave it on for a while until the fault shows up).

I am afraid it is difficult to recommend a repair company as I do most of my repairs myself.

As far as I can see, you have to be pretty unlucky to have problems with repair services - I know that some people do and it is regrettable. However, I have no control over any of the advertising that goes on in *Popular Computing Weekly* so there is not a lot I can do about it.

## Double dabble

A Hail, of St Leonards on Sea, writes:

**Q** I know how to solve hex to dec but not the other way around. I have tried writing a program on my Spectrum+ to do the job. No cop. Can you help me?

**A** The method is known as 'Double Dabble' and works by repeatedly dividing by 16 and taking the remainders as the hex result. For example take 1234 and convert to hex:

```
1234/16 = 77 remainder 2
77/16 = 4 remainder 13
4/16 = 0 remainder 4
```

Taking the remainders in reverse order and substituting hex digits for those greater than 9 (and always less than 16) gives 4D2 which is the hex equivalent to 1234 in decimal.

To turn this into Basic, the result of the division is obtained with INT(A/B) and the remainder with A-(INT(A/B)\*B). The ASCII code of zero is 48 and the code of A is 65 and so can be used to obtain the correct characters for the hex digits. If the remainder is less than 10 then adding 48 to it and then using CHR\$ gives the digit. If the remainder is greater than 9 simply add 55 so that 10=A (65) and use CHR\$. The Basic program for 4 digit hex (0-FFFF is 0-65535 in decimal) is:

```
10 INPUT "DEC TO HEX WITH - ",D
20 HS=""
30 FOR T=0 TO 3
40 H=-(INT(D/16)*16)
50 IF H>9 THEN HS=CHR$(H+55)+HS
60 IF H<10 THEN HS=CHR$(H+48)+HS
70 D=INT(D/16)
80 NEXT T
90 PRINT HS
```



# Driving lesson

Kenn Garroch advises on how to design a printer driver program.

This week I take an example and start the design process using the methods described, both pseudo code and flowcharts. The idea is a printer driver which will work with almost any machine and an Epson-style printer. The machines on which it will eventually work are the C64, BBC, Amstrad and Spectrum. The driver will reproduce the native character set using the dot graphics capability of the printer. The final implementation can be either machine code or a high-level language.

First, the initial statement of the idea. A printer driver which uses the built-in character set of the computer and an Epson-compatible printer, i.e., one which can reproduce bit graphics. That is the basic idea stated. Now it has to be broken into comprehensible sections but, first, some background information is needed.

Characters usually are defined in ROM or RAM as light-sequential bytes, each holding the bit pattern for a line of the character - see picture one. Normally the bit patterns are stored in ASCII character order, i.e., starting at space (ASCII 32) and progressing to 127.

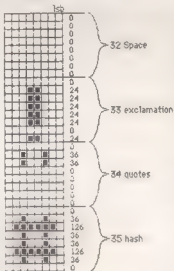
The definition must be converted into a form acceptable for the printer. In the case of the other Epson type, ESC  $\square$  n1 n2 followed by the bit image. This bit image is produced sideways as in picture two and can be either condensed or normal using ESC K and ESC L. It should be possible to add an option to allow selection of density.

The pseudo code is built this way. The core print routine accepts a string of character numbers as its argument, finds the definition for each, converts into bit image format and prints the string. Any other print routines such as those needed to list programs and files use this core for their output. The main routines for the core are:

1. Send the bit image header  $\square$  the printer. Image loop: Labels are suffixed with a colon.
2. Read a character from the input string and get the definition from ROM or wherever it is stored.
3. Convert the definition into bit image format.
4. Print the bit image.

Each of these statements is now broken down still further. The image header is made up of the characters - ESC K n1 n2 or ESC L n1 n2 for high density. The n1 n2 specify the length of the image data as  $(n2*256)+n1$  bytes and can be found from

the string length (SL) as  $n1=SL \text{ MOD } 256$  and  $n2=SL \text{ Div } 256$ .



Picture 1: Character storage in memory

MOD is equivalent to  $SL-(INT(L/256)*256)$  and  $DIV$  to  $INT(SL/256)$ . Use whichever language or notation with which you are most familiar when specifying operations like these. The image header (1) breaks down to:

Get n1 (string length MOD 256).

Get n2 (string length DIV 256).

Send 27,75,n1,n2 to the printer.

End of routine.

Note that the routine to send characters to the printer is machine-dependent and will be defined later when implementing each machine. Routine to get character definition (2) breaks down to:

Get current char from string using pointer (counter).

If ASCII value is less than 32 it is a control code so jump to CTRLCODE.

Subtract 32 from code since 32 is first char in ROM or store.

Multiply the result by eight since each definition takes eight bytes.

Read eight bytes from the character store base address plus the result of the last statement. Store the bytes in a buffer as the definition.

End of routine.

CTRLCODE:

Print the control code, normally only carriage return and possibly line feed.

End of routine.

This is a general outline and may not work for all machines, since chars may be none - ASCII as in the C64 case.

Convert to bit image (3) breaks down to: Take leftmost bits of each byte and convert into byte with most significant bit coming from the top line of the definition - see picture two. This breaks down to:

Set up counter for eight bits of image (ICNT=8).

Conov:

Set up counter for eight bytes of definition (DCNT=0).

Set up counter for position in conversion byte msh (CCNT=8).

Deconv:

Get byte of definition using DCNT which starts at top byte.

If bit ICNT set (to one), set bit CCNT else if zero, clear bit CCNT.

Decrement CCNT for next bit.

Increment DCNT for next byte.

If DCNT not 8 then jump to Deconv.

Store result in buffer using ICNT.

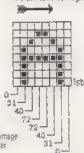
Decrement ICNT.

If non-zero then jump to Conov.

End of routine.

This is now in a form which can virtually be converted straight to program

Print left to right



Picture 2: Bit image used by printer

code. Print the bit image (4) breaks down to:

Set up counter for number of bytes to be sent to printer PCNT=0.

Ploop:

Using BCNT get byte and send to printer.

Increment BCNT.

If non-zero goto Ploop.

End of routine.

The routines should now be easily convertible to a language, as we will see in the next issue. □

## Tank

Christian Fiott

**T**ank is a two-player strategy game for the Amstrad CPC 464. The idea is that one player should try to score a direct hit on his opponent and blast him into a million pieces. The path of the shell is affected by the speed and angle at which it is fired - determined by the player - and direction and speed of the wind - a matter of luck. The buildings which are built between the players can either be shot

over, or blown out of the way. Starting the game, pressing 'O' sets up the options screen which allows the players to determine the size of the buildings and variation in wind strength. The playing keys are:

Player 1	Player 2	Function
A	Cursor up	Increase angle
M	Cursor down	Decrease angle
W	Cursor right	Increase speed and move left
/	Cursor left	Decrease speed and move right

Enter	Copy	Confirm command
Joystick 1	Joystick 2	All the above

*Tank* was designed originally for the Amstrad CPC464 but there should be no difficulty using it with the other CPC machines, since the game is written in Basic. Basic was used because there are many calculations for the projectiles and, since it is a strategy game, there is no real need for Amiga-style graphics. □

```

100 REM *****
110 REM * TANK *
120 REM *****
130 REM
140 REM (C) CHRIS FIOTT NOVEMBER 1987
150 REM
160 MODE 1
170 w=3:u=INT(RND*20)-10:1=5
180 s(0)=30:1(2)=30:a(0)=1:a(2)=1
190 xco(0)=a(0):xco(2)=0
200 SPEED INK 2,2
210 DIM I1(50),n1(50),n2(35),13(5)
220 FOR i=1 TO 45:READ I1(i),n1(i):NEXT
230 DATA .5,113,.5,134,1.5,0,.5,134,.5,1
27.5,113,1,67,1.67,1,84,1.8,5,113,.5,1
34,1.5,0,.5,134,.5,127,.5,134,1,113,1,11
3,1,127,1.0,.5,127,.5,150,1.5,0,.5,113,.
75,100,.25,113,.5,84,.5,113,1.5,0,.5,113
,.5,127,.5,134
240 DATA .5,150,.5,100,.5,0,.5,169,.5,17
9,.5,113,.5,0,.5,113,1,169,.75,169,.25,1
69,1,169,1,0
250 FOR i=1 TO 32:READ n2(i):NEXT
260 DATA 338,451,338,451,338,451,338,451
,338,451,338,451,358,451,358,451,358,451
,358,451,338,451,338,451,358,451,358,451
,338,451,338,451
270 FOR i=1 TO 5:READ I3(i):NEXT
280 DATA 1,1,1,1,.5,5
290 DES
300 KEY DEF 40,1,240:KEY DEF 49,1,241:KEY
DEF 50,1,242:KEY DEF 51,1,243:KEY DEF
52,0,224:KEY DEF 72,1,65:KEY DEF 73,1,98
:KEY DEF 74,1,47:KEY DEF 75,1,92:KEY DEF
76,0,13:KEY DEF 9,0,224
310 SYMBOL AFTER 32:SYMBOL 142,0,666,666
,0,0,666,666,6:SYMBOL 141,0,811,611,877,
811,611,811,877:SYMBOL 246,0,82,84,838,8
78,80,878,878:SYMBOL 247,80,840,820,815,
86,80,878,878
320 ENW 1,1,12,1,1,0,5,12,-1.5:ENW 2,1,6
,1,2:ENT -1,1,6,1,2:ENT -2,1,5,1,-1.5:EN
V 3,120,-1,20
330 INK 0,0:ORDER M:INK 1,13:INK 2,24:I
NK 3,26
340 ORIGIN 0,16
350 FOR j=0 TO 2 STEP 2:FOR i=1 TO 5:P
EAD k(13,j):NEXT i,1,j
360 DATA 240,241,242,243,224,65,98,47,92
,13
370 g=9,5:u=18
380 GOSUB 2130:IF UPPER(k(5))="O" THEN GO
SUB 2510
390 GOSUB 840
400 WINDOW 1,40,1,5
410 CLS
420 TAG
430 GOSUB 1210
440 ply=1
450 GOSUB 490
460 ply=1
470 GOSUB 490
480 GOTO 400
490 REM FIRE BULLET
500 GOSUB 1740
510 GOSUB 1160
520 snd=0
530 SOUND 2,0,0,2,2,.1
540 snd=0
550 ORIGIN xco(ply)+1*(ply+16)*(ply+31B)
,0
560 TAGOFF
570 PLOT -1000,-1000,3
580 PRINT CHR$(23):CHR$(1):
590 TAG
600 ux=(ply+1)*COS(a(ply+1))
610 ux=ux*(w*ply)
620 uy=(ply+1)*SIN(a(ply+1))
630 t=0:oy=0
640 x=0:y=0
650 MOVE x-(ply+320),y:PRINT CHR$(144):
660 WHILE y=0
670 CALL 82019
680 MOVE x-(ply+320),y:PRINT CHR$(144):
690 t=t+.2
700 x=(ux*t)+oy
710 y=(uy*t)+(-g*(t^2))/2
720 IF Iy(oy)AND (snd=0) THEN SOUND 241
1-ply,38,700,5,1,snd=1
730 oy=y
740 CALL 82019
750 MOVE x-(ply+320)+6,y:IF ITEST(0,0
)=2) OR (TEST(2,0)=2) OR (TEST(2,-2)=2
) OR (TEST(0,-2)=2) THEN 1540
760 MOVE x-(ply+320)+6,y:IF ITEST(0,0
)<0) OR (TEST(2,0)<0) OR (TEST(2,-2)
<0) OR (TEST(0,-2)<0) THEN 810
770 MOVE x-(ply+320),y:PRINT CHR$(144):
780 MEMO
790 MOVE x-(ply+320),y:PRINT CHR$(144):
800 y=y+.4
810 GOSUB 1260
820 w=ROUND(RND*40)-(w/2):IF ABS(w)
>40 THEN w=40:SIGN(w)
830 RETURN
840 REM SETUP SCREEN
850 TAGOFF:PRINT CHR$(23):CHR$(0):
860 MODE 1:ORIGIN 0,0
870 PAPER #1:1:PAPER #2:1:PAPER #3,1
880 PEN #1,0:PEN #2,0:PEN #3,0
890 RANDOMIZE TIME
900 WINDOW #4,1,40,22,25:PAPER #4,1:CLS
#4:WINDOW #5,1,40,1,5:PAPER #5,1:WINDOW
#6,2,39,2,4:PAPER #6,1:PEN #6,0
910 PAPER #0:PEN 1
920 PLOT 00,64,3
930 PRINT #4,CHR$(22):CHR$(1):
940 FOR i=1 TO 6
950 h=INT(RND*(i+1))+2
960 WINDOW #4,1+5+1,4+5,20+h,21:PAPER
#4,1:CLS #4
970 PRINT#4:FOR j=1 TO b STEP 2
980 PRINT #4,CHR$(22):CHR$(0):
990 PEN #4,0:PRINT #4," *":CHR$(143):CHR
$(0):
1000 PRINT #4,CHR$(22):CHR$(1):
1010 PEN #4,1:PRINT #4,CHR$(142):CHR$(0)
:
1020 PEN #4,3:PRINT #4,CHR$(141):PRINT#4
1030 NEXT j
1040 DRAW ((1-1)*#0)+#0,(h+16)+#6,3:DRAW
#1,00,0
1050 NEXT i
1060 PRINT #4,CHR$(22):CHR$(0):
1070 WINDOW #3,2,11,23,24

```

```

1000 PLOT 14,14,3:DRAW 162,0,3:DRAW 0,
34,3:DRAW -162,0,0:DRAW 0,-34,0
1010 WINDOW #1,30,39,23,24
1100 PLOT 462,14,3:DRAW 162,0,3:DRAW 0
,34,3:DRAW -162,0,0:DRAW 0,-34,0
1110 WINDOW #2,14,27,23,24
1120 PLOT 286,14,3:DRAW 226,0,3:DRAW 0
,34,3:DRAW -226,0,0:DRAW 0,-34,0
1130 FOR ply=1 TO 1 STEP 2:GOSUB 1160:N
EXT
1140 GOSUB 1430
1150 RETURN
1160 REM print info for player #ply
1170 CLS #12:ply
1180 PRINT #12:ply,"ANG.Et":a(ply+1);
1190 PRINT#(2+ply),"SPEED":STR#(s(ply+
1));
1200 RETURN
1210 REM print wind
1220 PRINT#2," WIND SPEED":STR#(ABS#w);
1230 PRINT#2," DIRECTION ";
1240 IF w=0 THEN PRINT#2,"*"; ELSE PRINT
#2,CHR#(243+(w/8));
1250 RETURN
1260 REM x-plosion
1270 CALL ABCA7
1280 SOUND 7,0,0,2,1,,30
1290 TAGOFF
1300 INK 3,6,0
1310 PRINT CHR$(23):CHR$(0);
1320 TAG
1330 MOVE x=ply*320,y
1340 FOR i:=1 TO 8
1350 FOR j:=1 TO 8
1360 MOVE 2,1:IF RAND(0,3) AND TEST#0
,0(1)<2 THEN PLOT#R,0,0
1370 NEXT
1380 MOVE -16,-2
1390 NEXT
1400 INK 3,6
1410 TAGOFF
1420 RETURN
1430 REM print d guns
1440 ORIGIN 0,70
1450 TAGOFF
1460 PRINT CHR$(23):CHR$(0);
1470 TAG
1480 PLOT -1000,-1000,2
1490 FOR op=1 TO 1 STEP 1
1500 MOVE xco(pp1),0:PRINT CHR$(124+100
(0));
1510 NEXT
1520 TAGOFF
1530 RETURN
1540 REM SOMEONE DIED
1550 TAGOFF
1560 PRINT CHR$(23):CHR$(0);
1570 INK 3,6,20
1580 CALL ABCA7
1590 PRINT CHR$(23):CHR$(0);
1600 SOUND 7,0,0,2,1,,30
1610 FOR i:=1 TO 100
1620 MOVE x=ply*320,y:PLOT#RND*20-10,
RND*20-10,INT(RND*3)

```

```

1630 NEXT
1640 ORIGIN 0,0
1650 CLS #5:CLS #6:PLOT 0,320,3:DRAW 64
0,0,0:DRAW 0,70,0:DRAW -640,0,3:DRAW
0,-70,3:PLOT 14,334,3:DRAW 610,0,0:DRAW
R 0,50,0:DRAW -610,0,3:DRAW 0,-50,3
1660 JMK 3,26
1670 PRINT#6:PRINT#6," PLAYER #":i-1
ply=i;" GAME OVER *****
1680 FOR d:=1 TO 3000:NEXT
1690 CLS #5:CLS #6:PLOT 0,320,3:DRAW 64
0,0,0:DRAW 0,70,0:DRAW -640,0,3:DRAW
0,-70,3:PLOT 14,334,3:DRAW 610,0,0:DRAW
R 0,50,0:DRAW -610,0,3:DRAW 0,-50,3
1700 PRINT#6:PRINT#6," PLAYER #":i-2
ply=i;" IS THE WINNER "
1710 IF INKEY#(0) THEN 1710
1720 GOSUB 2520
1730 RETURN
1740 REM input routine
1750 ORIGIN #30
1760 TAGOFF
1770 PRINT CHR$(13):CHR$(2);
1780 IF INKEY# THEN 1780
1790 CLS #5:CLS #6:PLOT 0,320,3:DRAW 64
0,0,0:DRAW 0,70,0:DRAW -640,0,3:DRAW
0,-70,3:PLOT 14,334,3:DRAW 610,0,0:DRAW
R 0,50,0:DRAW -610,0,3:DRAW 0,-50,3
1800 PRINT#6:PRINT#6," PLAYER #":i-2:ply=
i;" SELECT SPEED AND ANGLE."
1810 a=""
1820 WHILE k$=CHR$(k5,ply+1)
1830 k$=UPPER(INKEY#):IF k$="" THEN 183
0
1840 FOR i:=1 TO 4:IF k(i,ply+1)=ASC(k$)
THEN 1860
1850 NEXT i:SOUND 7,500,20,2,1:GOTO 189
0
1860 IF i=1 THEN a(ply+1)=a(ply+1)+1 EL
SE
IF i=2 THEN a(ply+1)=a(ply+1)-1 EL
SE
IF i=3 THEN s(ply+1)=s(ply+1)-1 ELSE I
F i=4 THEN s(ply+1)=s(ply+1)+1
1870 IF a(ply+1)<1 THEN a(ply+1)=1 ELSE
IF a(ply+1)>9 THEN a(ply+1)=90
1880 IF s(ply+1)<30 THEN s(ply+1)=30 EL
SE
IF s(ply+1)>200 THEN s(ply+1)=200
1890 GOSUB 1160
1900 MEND
1910 CLS #5:CLS #6:PLOT 0,320,3:DRAW 64
0,0,0:DRAW 0,70,0:DRAW -640,0,3:DRAW
0,-70,3:PLOT 14,334,3:DRAW 610,0,0:DRAW
R 0,50,0:DRAW -610,0,3:DRAW 0,-50,3
1920 PRINT#6:PRINT#6," PLAYER #":i-2:
ply=i;" SELECT POSITION."
1930 k$=""
1940 WHILE k$=CHR$(k5,ply+1)
1950 k$=UPPER(INKEY#):IF k$="" THEN 195
0
1960 FOR i:=2 TO 4:IF k(i,ply+1)=ASC(k$)
I THEN 1980
1970 NEXT i:SOUND 7,500,20,2,1:GOTO 201
0
1980 GOSUB 2050
1990 IF (i+1) AND (flag2=0) THEN xco(p)

```

```

ply+1)=xco(ply+1)+2 ELSE IF (i+3) AND (f
lag2=0) THEN xco(ply+1)=xco(ply+1)-2
2000 IF xco(ply+1)<-2 THEN xco(ply+1)=-2
ELSE IF xco(ply+1)>26 THEN xco(ply+1)=
26
2010 GOSUB 1430
2020 MEND
2030 PAPER #5,0:CLS #5:PAPER #5,1
2040 RETURN
2050 REM
2060 ORIGIN 0,0
2070 flag1=0:flag2=0
2080 FOR i:=0 TO 14 STEP 2:IF TEST (xco(p
ly+1)+16,1) >0 THEN flag2=1
2090 NEXT:IF TEST(xco(ply+1)+16,-2)=0 TH
EN flag2=1
2100 FOR i:=0 TO 14 STEP 2:IF TEST(xco(p
ly+1)-1,1)>0 THEN flag1=1
2110 NEXT:IF TEST(xco(ply+1)-2,-2)=0 TH
EN flag1=1
2120 RETURN
2130 REM title screen
2140 MODE 1
2150 ORIGIN 0,0
2160 WINDOW #5,1,40,19,23:PAPER #5,1:WIN
DOW #6,2,37,20,22:PAPER #6,1:PEN #6,0
2170 MOVE 50,200:DRAW 40,2,2:DRAW 0,10
:DRAW 45,0:DRAW 0,45:DRAW -130,0,3:DI
RAW 0,-45:DRAW 45,0,2:DRAW 0,-100,3
2180 MOVE 160,200:DRAW 40,145,3:DRAW 3
0,0:DRAW 40,-145,2:DRAW -30,0:DRAW -3
2,0,7,3:DRAW -32,-0,2:DRAW -30,0
2190 MOVE 320,200:DRAW 0,145,3:DRAW 30
0,0:DRAW 64,-100,2:DRAW 0,100,3:DRAW 3
0,0:DRAW 0,-145,2:DRAW -30,2:DRAW -64
,100,3:DRAW 0,-100,2:DRAW -30,0
2200 MOVE 480,200:DRAW 0,145,3:DRAW 30
0,0:DRAW 0,-60,2:DRAW 60,0,3:DRAW 30,
0:DRAW -60,-60,2:DRAW 60,-0,5:DRAW -30
0,0:DRAW -60,45,3:DRAW 0,-45,2:DRAW -3
0,0
2210 MOVE 620,200:DRAW 10,0,2:DRAW 0,1
0:DRAW -10,0,3:DRAW 0,-10
2220 CLS #5:CLS #6:PLOT 0,32,3:DRAW 640
0,0,0:DRAW 0,70,0:DRAW -640,0,3:DRAW 64
0,-70,3:PLOT 14,46,3:DRAW 610,0,0:DRAW
0,50,0:DRAW -610,0,3:DRAW 0,-50,3
2230 a$="" CHR$(164)+" CHRIS F
10 TT 1987":GOSUB 2310:IF INKEY#(F) IF 16(
0) THEN RETURN
2240 a$=" DESIGN & PROGRAMMING BY CHR
IS F":GOSUB 2310:IF INKEY#(F) IF 16(0) THEN
RETURN
2250 a$=" WRITTEN FOR PCW":GO
SUB 2310:IF INKEY#(F) IF 16(0) THEN RETUR
N
2260 a$=" HELLO TO MARZO, J.A.M., & MA
RCOL":GOSUB 2310:IF INKEY#(F) IF 16(0) TH
EN RETURN
2270 a$=" PRESS 'O' FOR OPTIONS ..
":GOSUB 2310:IF INKEY#(F) IF 16(0) THEN
RETURN
2280 a$=" PRESS ANY KEY TO START"
:GOSUB 2310:IF INKEY#(F) IF 16(0) THEN RE

```

\_\_\_\_\_

```

EIGHT  T:1
2590 J:=UPPER$(NAME$):IF J#"" THEN 259
2600 FOR I=1 TO 5:IF (K(I),J)=ASC(K$)
OR (K(I),J)=ASC(L$) THEN 2620
2610 NEXT I: SOUND 7,250,20,1:GOTO 259
2620 IF I=1 THEN I=1+1 ELSE IF I=2 THE
N I=1-1
2630 IF I=3 THEN W=U-1 ELSE IF I=4 T
HEN W=U+1
2640 IF W=0 THEN W=0 ELSE IF W=10 THE
N W=10
2650 IF I<1 THEN I=1 ELSE IF I>10 THEN I
=10
2660 WEND
2670 RETURN
2680 REM ** THAT'S ALL FOLKS **

```

\_\_\_\_\_

## Stuart W. Booth and David W. Ratcliffe

If you decide to continue the procedures Load-picture and then Jumble are called and looked is set to 0. ☐

```

Procedure Check_if_complete
  * =====
  *
  * Procedure to check if you have finished puzzle
  *
  * For AFA Basic compares all characters when doing a string comparison.
  * The screens are stored in character arrays and compared using "=="
  *
  * For AFA on optimized fast check
  *
  * =====
  *
  * Store Aumble_pics
  * Store picture in variable
  *
  * On-orig_pics Aumble_pics i check
  *
  * Complete true
  *
  * End
  *
  * Complete False

```

## Window

Jonathan Lewis

In these days of Wimps (Windows Icons and Mouse Programming Systems), displaying text in windows is quite the vogue. This routine allows a text window background to be drawn anywhere on the screen with a defined fill colour/pattern. Enter the program and run it. The syntax is CALL 40000,I,L,T,R,B where I is the pattern (0-255) and L,T,R,B are the Left, Top, Right and Bottom positions of the window in character coordinates. □

```
5 'print a coloured user defined window o
n the screen
10 addr=40000
20 READ a$:POKE addr,VAL("&"+a$):addr=ad
r+1
30 IF a$="C9" THEN PRINT "The end : call
40000,I,L,T,R,B":END
40 GOTO 20
50 DATA DD,46,08,78,DD,66,00,DD,4E,04,69,
DD,56,02,DD,5E,00,CD,44,BC,C9
```

## Message Scroll

M Holdstock

Scrolling messages can be used to improve the look of virtually any game or title screen. This scroll routine for the Spectrum includes a routine to set up all of the necessary machine code and the message to be scrolled. This can then be saved to tape and reloaded as a code section to fit any program you like.

Enter the listing and RUN. Next, type in the message you want to scroll across the bottom of the screen and press ENTER. The program will then prompt you to set up the cassette deck to save the machine code and message. If you just want to see it work, press a key, wait until the save is over and then hits. The space key stops the scroll and returns the Spectrum to command mode.

To use the scroller with your programs, CLEAR 50000 and LOAD"" CODE. RAN- TOMISE USR 60000 executes the scroll and the space bar stops it. □

```
1 REM Message scroll
2 REM by M.Holdstock
3 REM nrc 67 bytes,less text
4 REM For Popular Computing
5 CLEAR 50000:LET P=0:LET T=0
6 FOR P=64 TO 65460:READ A:LET T=T+A:POKE P,A:NEXT P
7 IF T=0 THEN BEEP 1,0:PRINT "ERROR:CHECK DATA LINES":STOP
8 DATA 23,163,134,17,0,60,19,0,92,254,32,100,126,254,8,48
9 DATA 179,210,33,0,0,111,41,41,41,15,235,33,155,80,6,0
10 DATA 20,19,19,16,250,30,8,33,25,60,14,9,229,8,32
11 DATA 167,103,11,43,16,151,225,36,13,32,242,19,118,32,233,225,33,24,92
12 POKE 13460,251:POKE 13458,8
13 PINGER 0: PAPER 0: INK 7:CLS
140 PRINT "AT 0.0: INVERSE 1: PLEASE ENTER YOUR SCROLL MESSAGE"
150 INPUT " " : LINE A$:CLS
160 FOR N=1 TO LEN A$:LET X=X+A$:POKE P,X:LET A$=A$(2 TO 1):LET P=P+1:NE
X=1:POKE P,X
170 PRINT "AT 0.1:PRESS RECORD ON YOUR TAPE: SAVE "SCROLL"CODE 654,67+N:CLS
180 PRINT "AT 0.1:PRESS 'S' TO START:AT 0.8:'SPACE' TO END."
190 IF (INKEY="S" OR INKEY=" ") THEN GO TO 170
200 GO TO 150
210 RESTORE USR 654
220 CLS : STOP
23000 SAVE "LISTING1"
```

## Ink Swapping

Lee Barton

The first program is for the Amstrad CPC and gives a simple demonstration of the effects that can be obtained using a limited amount of programming for 'ink swapping'. The call to &BD19 simply causes the computer to wait for the next screen scan. This gets rid of unwanted flickering due to interference between frequency of the ink swap and the screen update. The idea comes in very useful when you want to produce movement on the screen without actually redrawing any graphics. Simply draw the object in different places in different colours and then sequence the inks through. This gives a great increase in speed that would otherwise be impossible. □

Program 1

```
10 MODE 0
20 FOR B=1 TO 640 STEP 50
30 FOR A=2 TO 10
40 MOVE A*5+B,400:DRAW 1*5+B,0,A
50 NEXT A,B
60 PRINT CHR$(22),CHR$(1)
70 LOCATE 10,13:PEN 11:PRINT CHR$(180)
80 FOR A=2 TO 10:INK A,26
90 CALL &BD19:INK A,1
100 NEXT A:GOTO 80
```

More...

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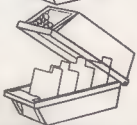
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# Feed the world with microchips

The other week I was amused to hear a Radio One disc jockey quote, without mentioning his source, an item of computer news from a column in the *The Guardian* Thursday computer page I had just finished reading.

I acknowledge an article which enables me to return to the subject of micros and the Third World, which I raised in July.

The technology gap between rich and poor countries still causes me much concern but a few more glimmers of hope have emerged since then.

According to *Guardian's* reporter Meirion Jones, Save the Children Fund and Oxfam workers in Africa are using Argstrad CPC 6128 and PCs for a variety of monitoring exercises in communities at risk from poverty and malnutrition.

Special programs analysing body measurements of children warn of areas where emergency food supplements are needed in Sudan and Ethiopia.

Food distribution administration in Sudan, an immunisation programme in Mozambique, and a disablement register in Zimbabwe are also supported by aid agency micros.

In the Sahel weather satellite data is being analysed by a PC, programmed to predict the best times for sowing and cultivation, to enable farmers to take

advantage of the little rain.

That is just the kind of creative use that reveals the potential of the micro to help tackle the formidable difficulties faced by countries whose environments and economies have been ruined by the wrong kind of development hitherto.

Needless to say, the conditions of crisis produce their own hassles.

Irregular power supplies, climate and atmospheric dust are hostile to machines meant for the comfortable home environments of Europe.

Small portables are already showing their potential, being so much easier to protect, as are microfloppy discs.

I wonder if Sir Clive Sinclair read the same *Guardian* article and realised what his new Z88 has to offer to Third World users?

No moving parts, sealed case, compact and easily-linkable is a micro with disc storage in kinder conditions. At last, a context where a rubber keyboard makes total sense. What a gift.

Much as I dislike Government policy which assists developing countries mainly by offering cheap credit, or discounts on its export goods, I see here a case for investing public money in developing Third World markets for Sir Clive's machine and relevant software.

The emphasis should be on potential users in preventative health care, agriculture, and education; not on promoting micros as status symbols for wealthy elites but as tools for enabling the poor to help themselves.

That might only be a first step. Another possibility would be to extend into manufacturing micros in Africa but not like S.E. Asia, where plentiful labour has given us cheap products; made some rich and kept many poor.

Control of innovative technology has been retained by the investing industrial nations and most of its output exported to markets elsewhere.

Why not divert at least some resources from the advancing of new technology into broadening its range of applications? Encourage an African micro industry to grow, adapting to and serving the most urgent African needs rather than marketing in ways which generate western-style demands for goods irrelevant to the situation?

Given the creativity and resilience shown by the many peoples of that great continent in the face of such overwhelming odds, such a venture could prove in the long term to be a more profitable investment than on the face of it seems likely. □

Keith Kimber

## HACKERS

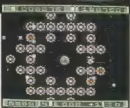


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